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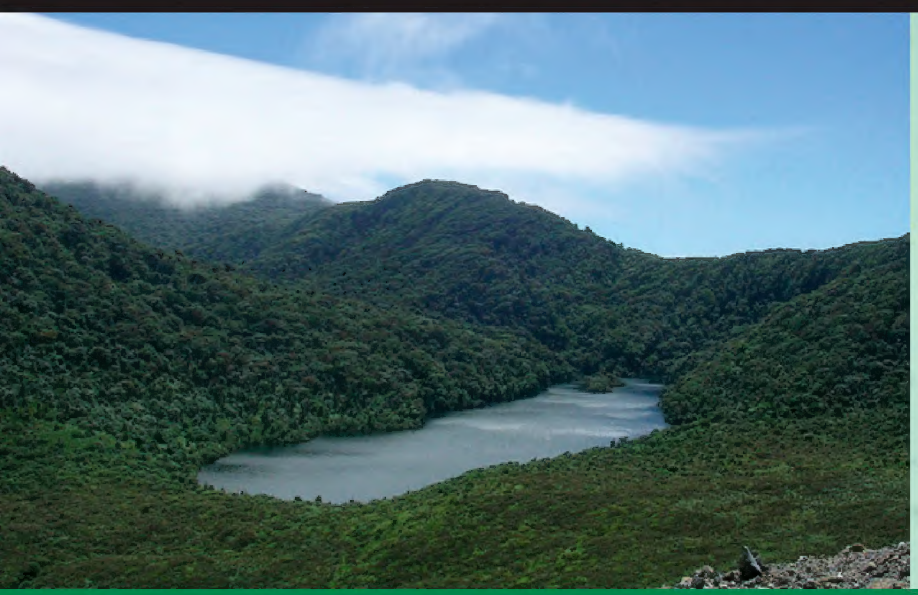

Catalog of Liverworts (Marchantiophyta) and Hornworts (Anthocerotophyta) from Central America and Cocos Island

Gregorio Dauphin, Lars Söderström, Anders Hagborg, Noris Salazar Allen, Adriel M. Sierra, Tamás Pócs, José Gudiño L., Mervin E. Pérez, Juan Carlos Villarreal, Yarency Rodríguez, Matt von Konrat, and Alan Whittemore

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ABSTRACT

Dauphin, Gregorio, Lars Söderström, Anders Hagborg, Noris Salazar Allen, Adriel M. Sierra, Tamás Pócs, José Gudiño L., Mervin E. Pérez, Juan Carlos Villarreal, Yarency Rodríguez, Matt von Konrat, and Alan Whittemore. *Catalog of Liverworts (Marchantiophyta) and Hornworts (Anthocerotophyta) from Central America and Cocos Island*. Smithsonian Contributions to Botany, number 119, xvi + 431 pages, 15 figures, 4 tables, 2025. — This catalog represents the first enumeration of all species of liverworts (Marchantiophyta) and hornworts (Anthocerotophyta) for Central America, including Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and Cocos Island of Costa Rica. It includes 846 liverwort species in 126 genera as well as 19 hornwort species in 7 genera and 4 families. The catalog is based on more than 1,500 publications and from more than 900 herbarium specimens examined by the authors. There are 184 new country or region records reported: Belize (17), Costa Rica (10), El Salvador (22), Guatemala (7), Honduras (51), Nicaragua (45), Panama (7), and Cocos Island of Costa Rica (25). Accepted names are listed alphabetically, and auxiliary information including basionyms and heterotypic synonyms is presented for each taxon where appropriate. Broader geographical distribution is also provided for each taxon for context. There are 42 reported taxa (species and infraspecific taxa) that are considered doubtful and 38 reported taxa that are excluded. Sixteen taxa are reported as new to Central America. *Harpalejeunea exocellata* Herzog is synonymized under *Harpalejeunea tridens* (Besch. et Spruce) Steph., and *Leucolejeunea nana* S.Winkl. is placed under the synonymy of *Cheilolejeunea conchifolia* (A.Evans) W.Ye et R.L.Zhu. The taxonomic, geographic, and auxiliary information included here will have broad utility beyond liverwort and hornwort systematics, extending to the study and analyses of species richness, conservation, and systematic research at both country and regional levels.

Keywords: checklists, taxonomy biodiversity hotspot, bryophytes, floristics, bryological exploration, tropical ecoregions

[Abstract in Spanish (resumen) provided on page v.]

Cover images (from left): Laguna Jilgueros, Parque Nacional Rincón de La Vieja, Guanacaste, Costa Rica; *Colura tenuicornis*, from Escazú, Costa Rica; and *Riccia* sp. from Ciudad Colón, Costa Rica. Photos by G. Dauphin.

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RESUMEN

Este catálogo representa la primera enumeración de todas las especies de hepáticas (Marchantiophyta) y antocerotas (Anthocerotophyta) para Centroamérica, incluyendo Belice, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá, y la Isla del Coco de Costa Rica. Este catálogo incluye 846 especies de hepáticas en 126 géneros, así como 19 especies de antocerotas en siete géneros y cuatro familias . El catálogo se basa en más de 1500 publicaciones y en más de 900 especímenes de herbario examinados por los autores. Se reportan 184 nuevos registros para los países o regiones: Belice (17), Costa Rica (10), El Salvador (22), Guatemala (7), Honduras (51), Nicaragua (45), Panamá (7), e Isla del Coco de Costa Rica (25). Los nombres aceptados se enumeran alfabéticamente, así como la información auxiliar, incluidos los basónimos y sinónimos heterotípicos de cada especie y taxones infra específicos, cuando procede. La distribución geográfica más amplia también se proporciona para cada taxón para contextualizar. De los reportes, 42 se consideran dudosos y 38 se excluyen. Se comunican 16 taxones como nuevos para Centroamérica. *Harpalejeunea exocellata* Herzog se sinonimiza bajo *Harpalejeunea tridens* (Besch. et Spruce) Steph. y *Leucolejeunea nana* S.Winkl., se pone bajo la sinonimia de *Cheilolejeunea conchifolia* (A.Evans) W.Ye et R.L.Zhu. El catálogo se completa con una lista de sinónimos. La información taxonómica, geográfica y auxiliar incluida aquí tendrá una amplia utilidad más allá de la sistemática de las hepáticas y antocerotas, extendiéndose al estudio y análisis de la riqueza de especies, la conservación y la investigación sistemática tanto a nivel nacional como regional.

Palabras clave: checklists, taxonomía, hotspots de biodiversidad, briofitas, florística, exploración briológica, ecorregiones tropicales

[Resumen en inglés (Abstract) en página iv.]

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Catalog of Liverworts (Marchantiophyta) and Hornworts (Anthocerotophyta) from Central America and Cocos Island

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INTRODUCTION

Central America harbors an estimated 5%–12% of the planet's biodiversity (Morales-Marroquín et al. 2022). The region forms the majority of the landmass that has been identified as the Mesoamerica biodiversity hotspot, which is the third largest of the thirty-six global hotspots (Myers et al. 2000; Conservation International 2011). The Mesoamerican and Chocó biodiversity hotspots were evaluated to be among the top twelve most important on the world's terrestrial surface based on species richness, endemism, natural habitat loss, and conservation status (Hrdina and Romportl 2017). Central America includes regions with extraordinary plant species richness and is among the top five global centers of vascular plant diversity (Barthlott et al. 2007). Central America has had a rich and dynamic geological history, especially since the Miocene, creating diverse and new ecological niches and playing a key role in understanding ecological and evolutionary processes between the North and South American biota (Cano et al. 2022; Morales-Marroquín et al. 2022).

Central America has variously been defined as including some parts of Mexico and the Caribbean but is here defined as consisting of the seven countries on the Central American Isthmus south of Mexico to northwest of Colombia (Figure 1). With a total area of 522,800 km², Central America contains an estimated 10.9% of the world's diversity of liverworts and hornworts (Early Land Plants Today [ELPT] unpublished database 2024.04.01). Gradstein et al. (2001b) found that in terms of liverwort genera Central America is the second-richest area in the Neotropics, surpassed only by the Northern Andes. Despite its great biodiversity, it is clear that liverworts and hornworts have been generally overlooked or understudied compared to seed plants, arthropods, birds, mammals, and amphibians throughout Central America. Moreover, the state of our floristic knowledge of liverworts and hornworts is deficient compared to many other biodiversity hotspots and other ecologically significant areas of the globe. Almost four decades ago, Matteri (1985) highlighted that bryological exploration remains at a very early age, and later Stotler et al. (1998) stressed, especially, the lack of floristic knowledge for liverworts and hornworts. Although there has been great progress in some regions within Central America, a lack of foundational floristic knowledge remains for the region. Knowledge about the Central America flora has been accumulating from local records and checklists

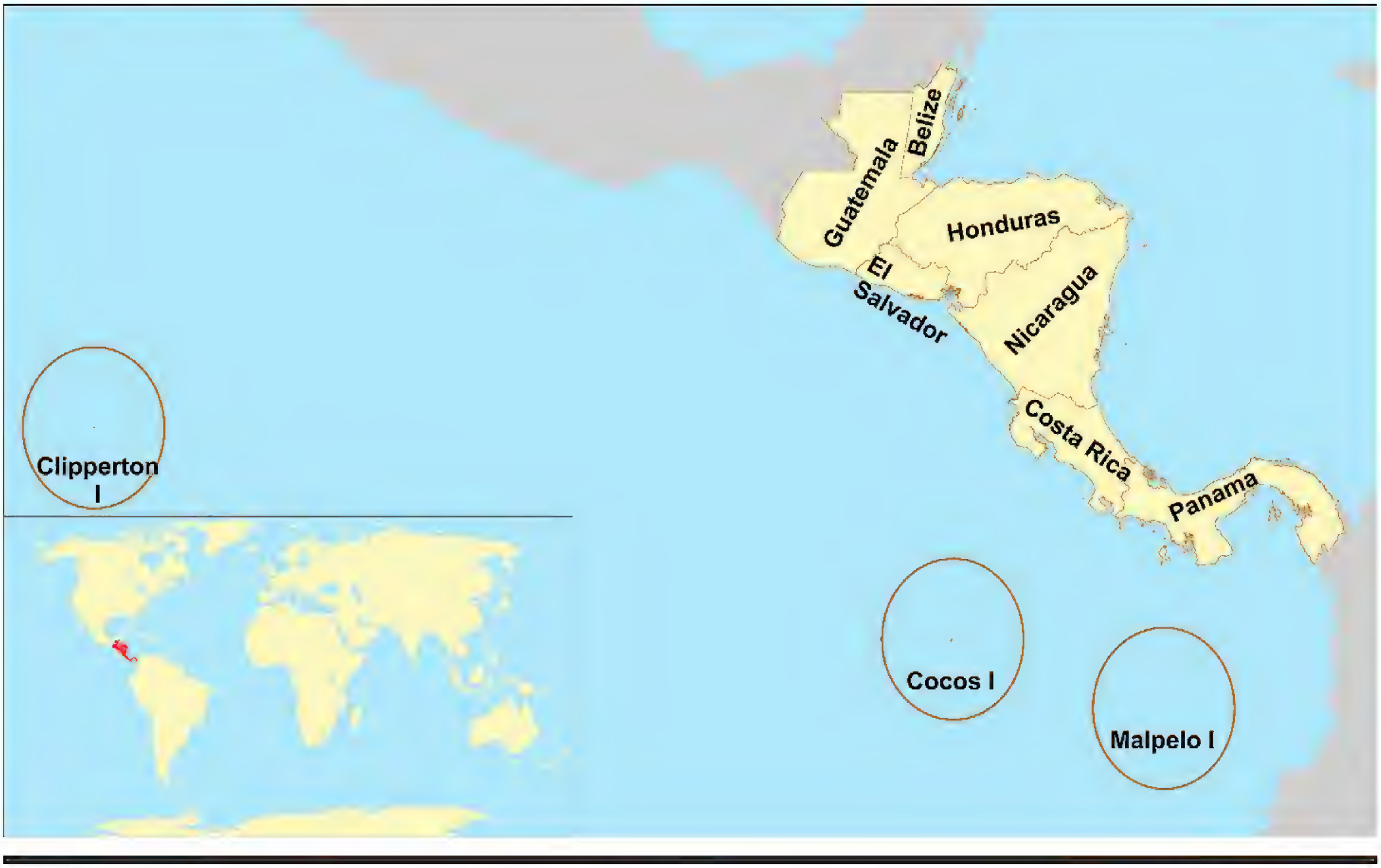

FIGURE 1. Central America and Central American Pacific islands and their position globally (inset map).

over time since the nineteenth century (see "Exploration of the Liverwort and Hornwort Flora of Central America"). Nevertheless, bryological research in Central America has been uneven. Costa Rica and Panama stand out as the best-explored countries, while there is a remarkable gap in floristic knowledge in countries such as Nicaragua. Notably, in a comprehensive global survey of checklists Söderström et al. (2008) identified a lack of lists for most of Central America.

The significance of checklists was summarized by Söderström et al. (2008), outlining the utility of checklists as powerful and important tools and their applicability to taxonomy, systematics, and conservation. The checklist, which verifies accepted and synonymized taxonomic names generated from herbarium specimens and records in the literature, represents a useful source of information for hypothesis-driven biodiversity science (Droege et al. 2008). Here, we present the first checklist, in the form of a catalog, of liverworts and hornworts covering the whole of Central America in an effort to further promote bryological research in the region and provide a foundation for revisionary studies and floristic research. The checklist provides the critical distinction between reports from the literature where authors have cited specimens ("firsthand reports") and reports only citing earlier reports ("secondhand reports"). This checklist fills a major gap in our knowledge of Central American terrestrial plants.

ECOLOGICAL, EVOLUTIONARY, AND BIOLOGICAL SIGNIFICANCE OF LIVERWORTS AND HORNWORTS

Liverworts and hornworts (Figure 2) are of critical biological, ecological, and evolutionary significance (e.g., Longton 1992; Asakawa 1998; Hallingbäck and Hodgetts 2000; Gradstein et al. 2001b; Wellman et al. 2003; Qiu et al. 2007). Bryophytes are the second-largest group of land plants after flowering plants and are pivotal in our understanding of early land plant evolution (e.g., Ligrone et al. 2012; Zhang et al. 2020). Bryophytes play a significant ecological role including CO_2 exchange (De Lucia et al. 2003), plant succession (Cremer and Mount 1965), production and phytomass (Frahm 1990), nutrient cycling (Coxson et al. 1992; Cornelissen et al. 2007; Markham and Fernández 2021), atmospheric chemistry (Edtbauer et al. 2021), and water retention (Pócs 1980; Gradstein et al. 2001b). Liverworts are found on soil, rocks, and trees throughout the world, from coastal Antarctica to the tundra in the Northern Hemisphere and from semiarid

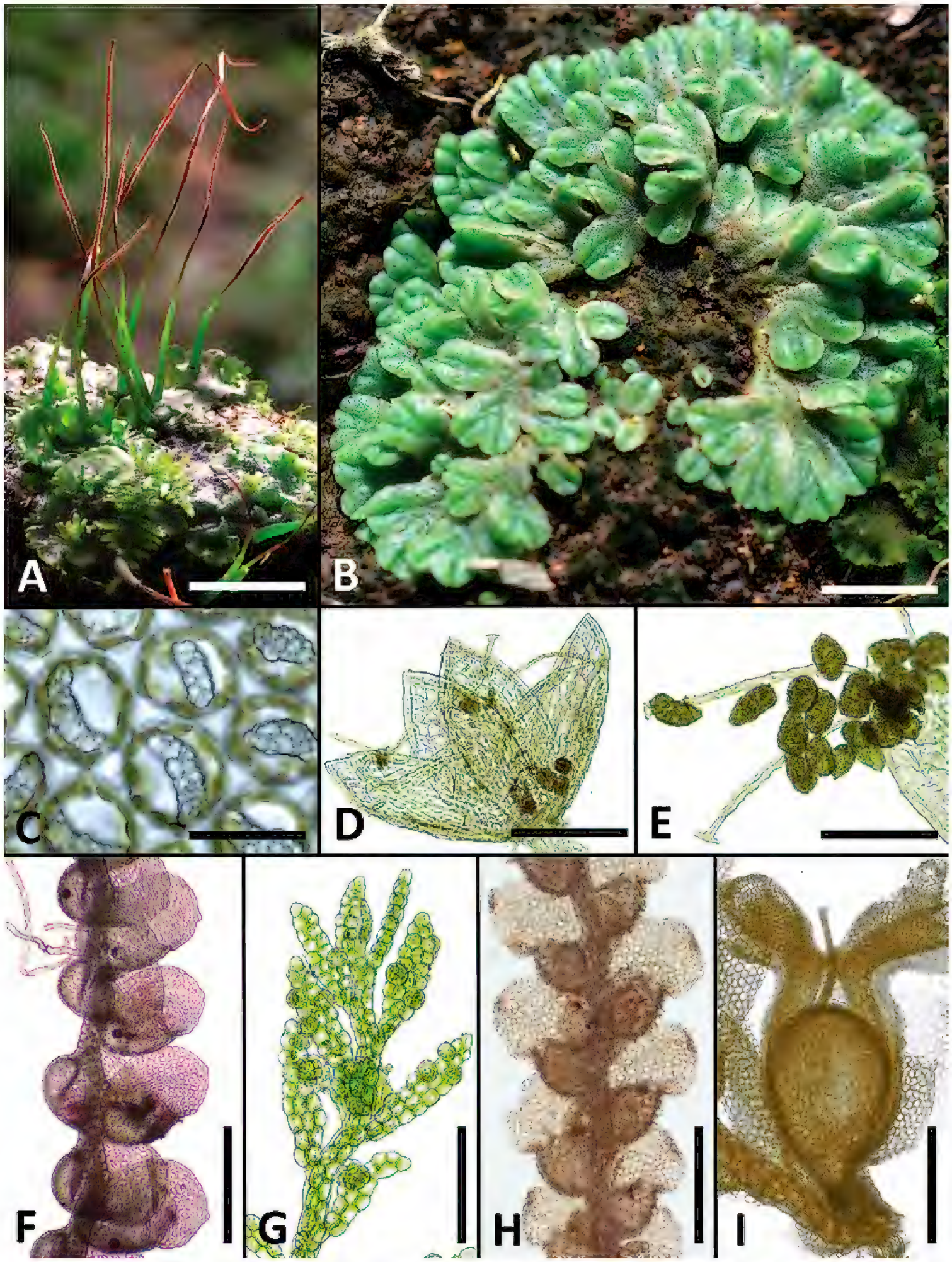

FIGURE 2. Liverworts and hornworts. (A) *Nothoceros vincentianus* (Lehm. et Lindenb.) J.C.Villarreal (*J.C. Villarreal s.n.*; Santa Fe, Veraguas, Panama). Scale bar: 2 cm. (B) *Riccia* (Ciudad Colón, Costa Rica). Scale bar: 5 mm. (C) *Pycnolejeunea contigua* (Nees) Grolle, oil bodies (*Zartman 10097*; Brazil). Scale bar: 22 µm. (D–E) *Colura tenuicornis* (A.Evans) Steph., sporophyte: (D) seta and valves and (E) spores and elaters (*Dauphin s.n.*; Escazú, Costa Rica). Scale bars: 310 µm in D, 141 µm in E. (F) *Nowellia reedii* H.Rob. (*Dauphin 2462*; Volcán Cacao, Costa Rica). Scale bar: 300 µm. (G) *Cololejeunea minuscula* Pócs (*Dauphin s.n.*; Escazú, Costa Rica). Scale bar: 129 µm. (H) *Cheilolejeunea norisiae* G.Dauphin et Gradst. (*Sierra 5762*; Santa Fe, Veraguas, Panama). Scale bar: 248 µm. (I) *Ceratolejeunea spinosa* (Gottsche) Steph. (*Dauphin 2712*; Esmeraldas, Ecuador). Scale bar: 349 µm. Photos by A.M. Sierra (A, C, H) and G. Dauphin (B, D–G, I).

areas of Australia to the Amazon rainforests (Hallingbäck and Hodgetts 2000). Although there are xerotolerant taxa, the majority of liverworts are found in relatively humid and shaded terrestrial ecosystems (Gradstein and Costa 2003). Liverworts and hornworts are an important component of the vegetation in many regions of the world, constituting a major part of the biodiversity in moist forest, wetlands, mountain, and tundra ecosystems (Hallingbäck and Hodgetts 2000). Liverworts, hornworts, and mosses offer microhabitats that are critical to the survival of a tremendous diversity of organisms such as single-celled eukaryotes, protozoa, and numerous groups of invertebrates and microcrustaceans (Gerson 1982; Acosta-Mercado et al. 2012). Their structural contribution to levels of diversity might be as significant as that of vascular plants, albeit at a smaller scale (von Konrat et al. 2008; Acosta-Mercado et al. 2012). These groups of land plants are also important environmental and ecological indicators (Rao 1982; Pitcairn et al. 1995; Gradstein et al. 2001b; Giordano et al. 2004) and have been used as indicators of past climate change, to validate climate models, and as potential indicators of global warming (Gignac 2001; Ötvös and Jócsák 2011).

ADMINISTRATIVE AND PHYSICAL DESCRIPTION OF THE AREA

With a total area of 522,800 km^2, the Central American Isthmus joins the southern part of Mexico with Colombia (Figure 1). As a geographic and tectonic unit, Central America extends from the Tehuantepec Isthmus in Mexico to the lowlands of Río Atrato in Colombia (Gómez 1986; Bergoing 2015). Geologically, the Isthmus can be divided into two units, the Septentrional Central America and Meridional Central America. The former is an extension of the North American Continent, with its limit in Central Nicaragua; the latter shows more geological affinity with the Caribbean, Pacific, and NW Colombia (Gómez 1986). The closing of the land bridge between North America (part of the ancient Laurasia continent) and South America (part of the ancient Gondwana continent) only happened at the end of the Pliocene with the collision of the Caribbean and Cocos tectonic plates, i.e. ~2.7 million years ago (Malzer and Fiebig 2008; Bergoing 2015).

The Central American Isthmus constitutes a narrow bridge between North America and South America, surrounded by the Caribbean Sea and the Pacific Ocean. Its main axis is made up of a chain of volcanoes in the Septentrional Central American unit and the tectonic tertiary mountain ranges of Tilarán and Talamanca in the southern Meridional Central America unit. The eastern slopes of the mountains, facing the Caribbean, are very moist due to their exposure to the moisture-laden trade winds and are covered by evergreen rainforests. The western, Pacific slopes are normally drier, especially below 1,000 m, being located in the rain shadow; they are covered mainly by deciduous woodlands and scrub (Gradstein et al. 2001b). Farther south, starting at the Tárcoles River, Costa Rica, the Pacific coastal climate becomes wetter, and moist evergreen forests occur.

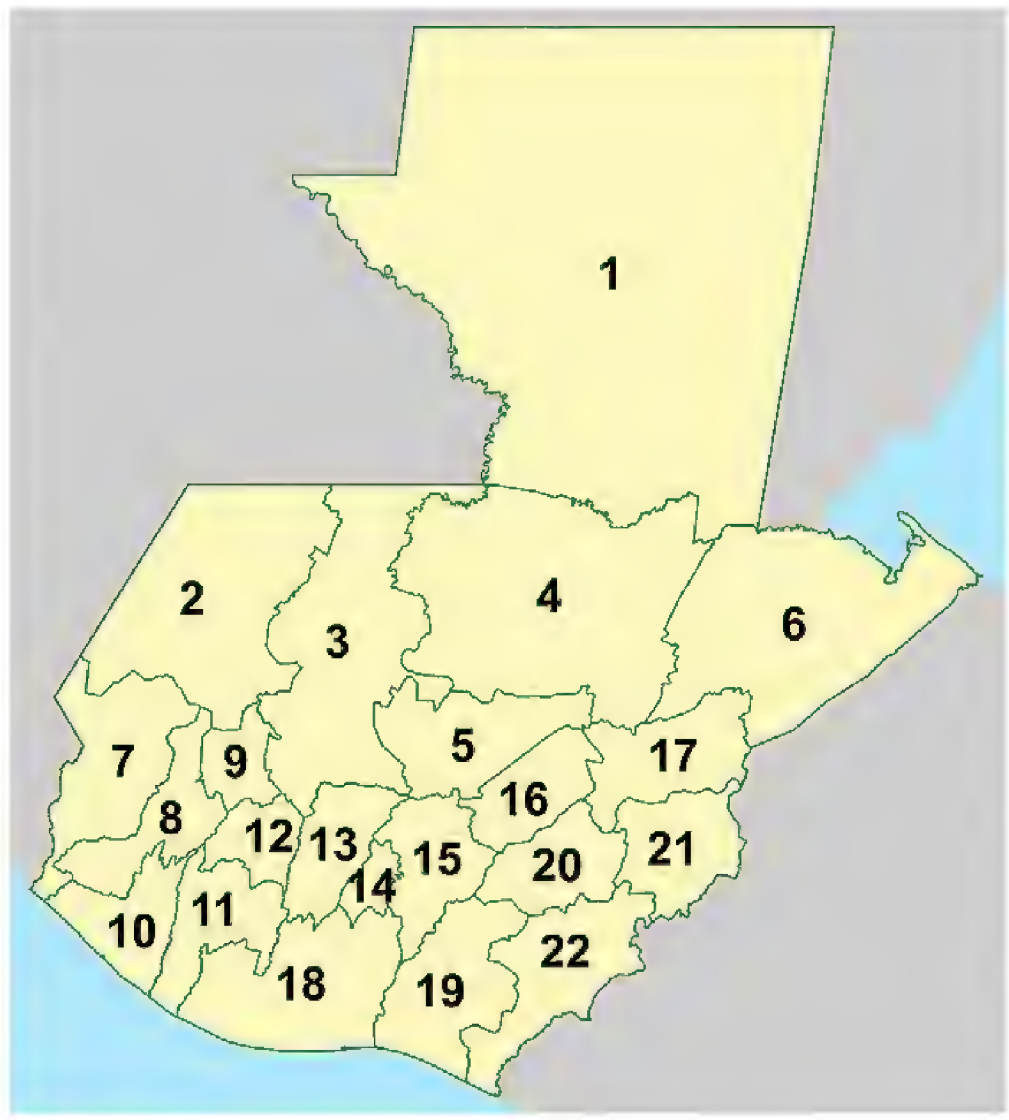

FIGURE 3. Guatemala with first-order administrative divisions. (1) El Petén. (2) Huehuetenango. (3) Quiché. (4) Alta Verapaz. (5) Baja Verapaz. (6) Izabal. (7) San Marcos. (8) Quetzaltenango. (9) Totonicapán. (10) Retalhuleu. (11) Suchitepéquez. (12) Sololá. (13) Chimaltenango. (14) Sacatepéquez. (15) Guatemala. (16) El Progreso. (17) Zacapa. (18) Escuintla. (19) Santa Rosa. (20) Jalapa. (21) Chiquimula. (22) Jutiapa.

Administrative Division. Central America consists of seven countries: Belize, Costa Rica (including Cocos Island), El Salvador, Guatemala, Honduras, Nicaragua, and Panama (Figure 1). Each country is divided into first-order administrative subdivisions, as shown in Figures 3–9.

There are three smaller islands off the coast of Central America, often referred to as the Central American Pacific Islands (e.g., Brummitt 2001), that are included in this catalog: Clipperton Island, belonging to France; Malpelo Island, belonging to Colombia; and Cocos Island, belonging to Costa Rica. However, liverworts and hornworts are only reported from Cocos Island, although at least Malpelo Island should have liverworts.

Phytogeography of Central America

There have been several historical and more recent attempts to classify Central American vegetation (Gómez 1986). Although other classification systems have been proposed (e.g., Gómez 1982) for Central America, Holdridge's Life Zone

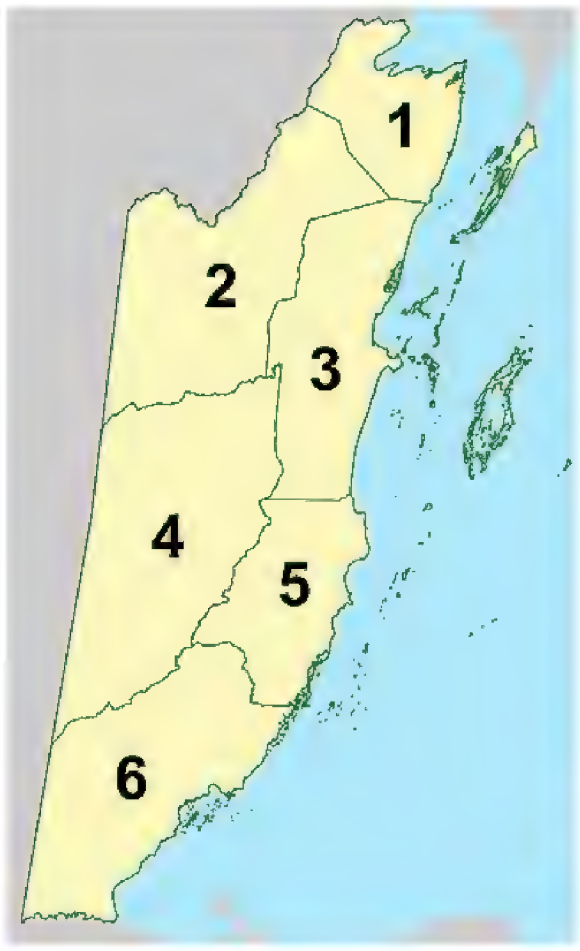

FIGURE 4. Belize with first-order administrative divisions. (1) Corozal. (2) Orange Walk. (3) Belize. (4) Cayo. (5) Stann Creek. (6) Toledo.

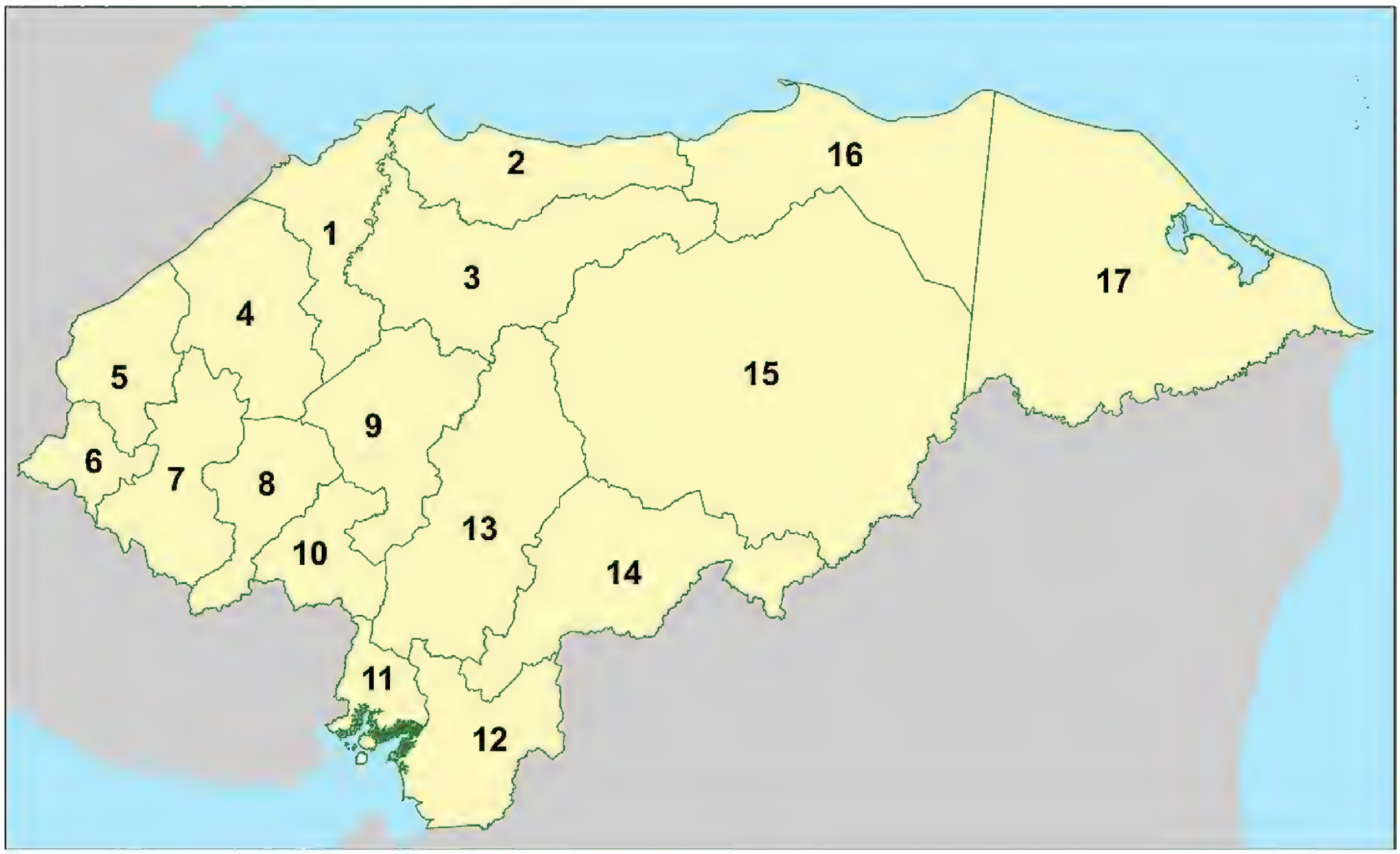

FIGURE 5. Honduras with first-order administrative divisions. (1) Cortés. 2) Atlántida. 3. Yoro. 4. Santa Bárbara. 5. Copán. 6. Ocotepeque. 7. Lempira. 8. Intibucá. 9. Comayagua. 10. La Paz. 11. Valle. 12) Choluteca. 13. Francisco Morazán. 14. El Paraíso. 15. Olancho. 16. Colón. 17. Gracias a Dios.

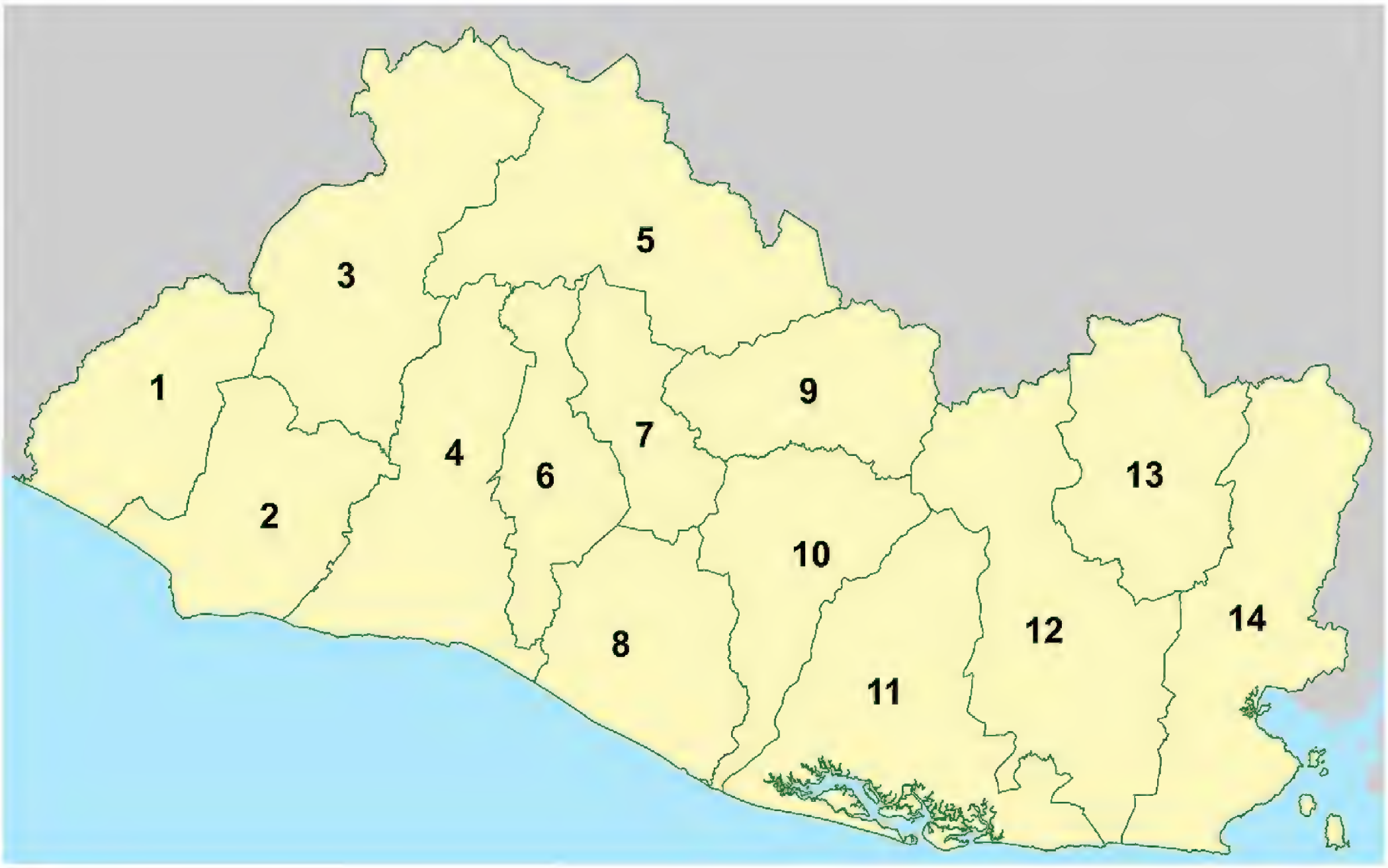

FIGURE 6. El Salvador with first-order administrative divisions. (1) Ahuachapán. (2) Sonsonate. (3) Santa Ana. (4) La Libertad. (5) Chalatenango. (6) San Salvador. (7) Cuscatlán. (8) La Paz. (9) Cabañas. (10) San Vicente. (11) Usulután. (12) San Miguel. (13) Morazán. (14) La Unión.

FIGURE 7. Nicaragua with first-order administrative divisions. (1) Madriz. (2) Nueva Segovia. (3) Jinotega. (4) Chinandega. (5) Estelí. (6) León. (7) Managua. (8) Matagalpa. (9) Boaco. (10) Carazo. (11) Masaya. (12) Granada. (13) Rivas. (14) Chontales. (15) Río San Juan. (16) Atlántico Norte. (17) Atlántico Sur.

FIGURE 8. Costa Rica with first-order administrative divisions. (1) Guanacaste. (2) Alajuela. (3) Heredia. (4) Puntarenas. (5) San José. (6) Cartago. (7) Limón.

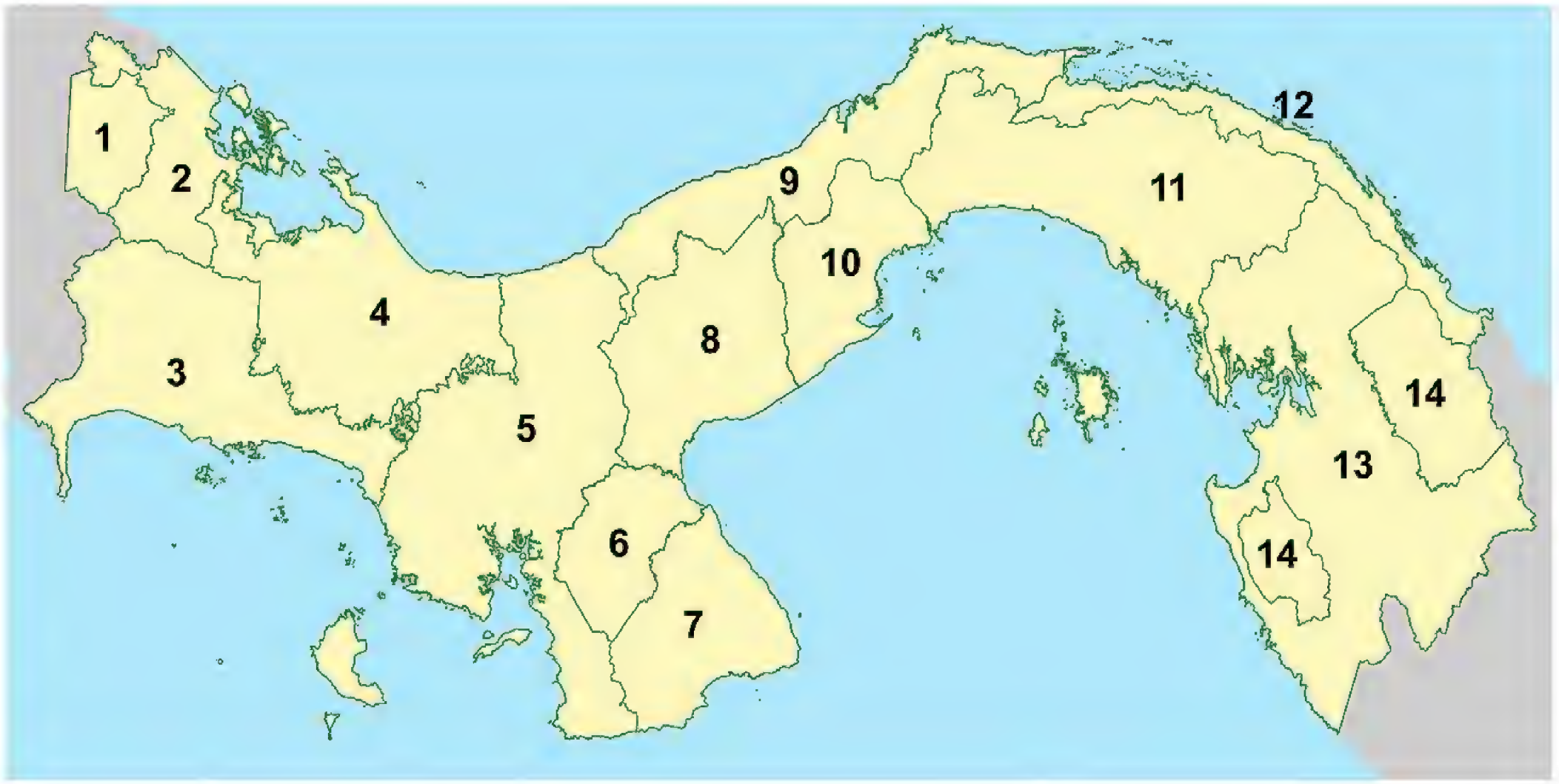

FIGURE 9. Panama with first-order administrative divisions. (1) Naso Tjër Di comarca. (2) Bocas del Toro. (3) Chiriquí. (4) Ngäbe Buglé comarca. (5) Veraguas. (6) Herrera. (7) Los Santos. (8) Coclé. (9) Colón. (10) Panama West. (11) Panama. (12) Guna Yala comarca. (13) Darién. (14) Emberá-Wounaan comarca.

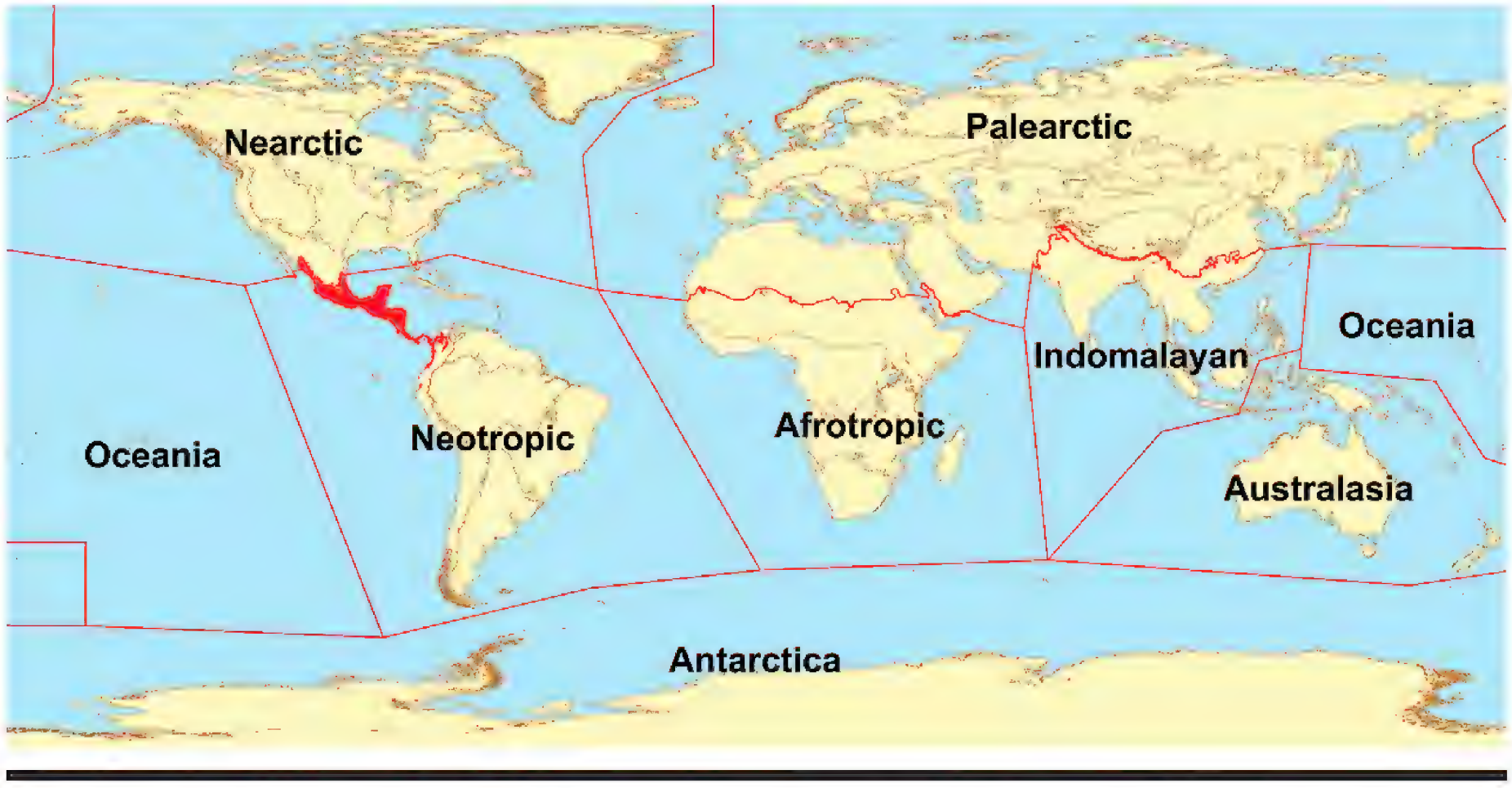

FIGURE 10. Realms of the world, with the Central American subrealm in red (after Olson et al. 2001; Dinerstein et al. 2017).

System has been commonly used in the last decades (e.g., Holdridge 1967; Tosi 1969).

An attempt to classify the earth into large-scale biogeographic regions is called the "Ecoregions of the World" (Dinerstein et al. 1995, 2017; Olson et al. 2001; for an interactive map, see https://ecoregions.appspot.com/). Ecoregions provide a large-scale conceptual framework for the identification of habitats that can serve as a tool to compare biodiversity and for conservation by mapping the status of their natural habitats and degree of protection (Olson et al. 2001; Strassburg et al. 2020).

Central America lies within the Neotropical realm (Figure 10), where it forms the Central American subrealm (Olsen et al. 2001; Dinerstein et al. 2017). Of the 14 global biomes recognized by Olson et al. (2001) and Dinerstein et al. (2017), 5 occur in the Central American subrealm (Table 1, Figure 11). Twenty-one different ecoregions occur in Central America.

Tropical and Subtropical Moist Broad-Leaved Forests

The biome that covers the largest part of Central America is the tropical and subtropical moist forests (Figure 11), covering approximately 55% (319,184 km^2) of the land area and represented by 11 ecoregions (Dinerstein et al. 2017; Table 1).

Petén-Veracruz Moist Forests

The Petén-Veracruz moist forests ecoregion (Figure 12) covers 162,819 km^2 (Table 1), of which 70,674 km^2 extends in Central America. It lies in coastal lowlands along southern Mexico, Belize (18,322 km^2), and northern Guatemala (52,352 km^2) between the Gulf of Mexico and the northern Sierra Madre de Chiapas and consists of a matrix of wetlands, riparian habitats, and moist forests (Corrales et al. 2015). The climate is tropical humid with rain during eight months of the year. Precipitation levels are high (mean 2,245 mm/year; Corrales et al. 2015).

This ecoregion has been relatively undisturbed in the past, with 60% of its original habitat remaining and 52% of its area protected (Corrales et al. 2015). However, human settlement, land clearing for agriculture, and major industrial development are severely threatening this ecoregion (Bullock et al. 2019; Devine et al. 2020). This is of real concern, at least for Guatemala, since the buffer zone of the largest protected biosphere reserve in the country will be completely deforested by 2030 if the current deforestation rate is maintained (Bullock et al. 2019).

Based on herbarium specimens, Fulford (1938) reported 27 species of corticolous Lejeuneaceae from the Caribbean coastal plain forest. Most are widespread, common lowland moist or wet forest species. A recent study in three protected areas of Petén (Cerro Cahuí, El Zotz, and Laguna del Tigre) reported 15 liverwort species distributed in 5 families, where Lejeuneaceae is the most diverse family, with 11 species (Morales Can 2011). In a preliminary checklist of liverworts of Alta Verapaz, 37 species were reported. Lejeuneaceae is also the most diverse family there, with 18 species (Pérez and López-Medina 2012).

Sierra Madre de Chiapas Moist Forests

The Sierra Madre de Chiapas moist forests ecoregion (Figure 12) covers 12,015 km^2 (Table 1) of Mexico, Guatemala (6,119 km^2), and El Salvador (68 km^2) on the Pacific side of the

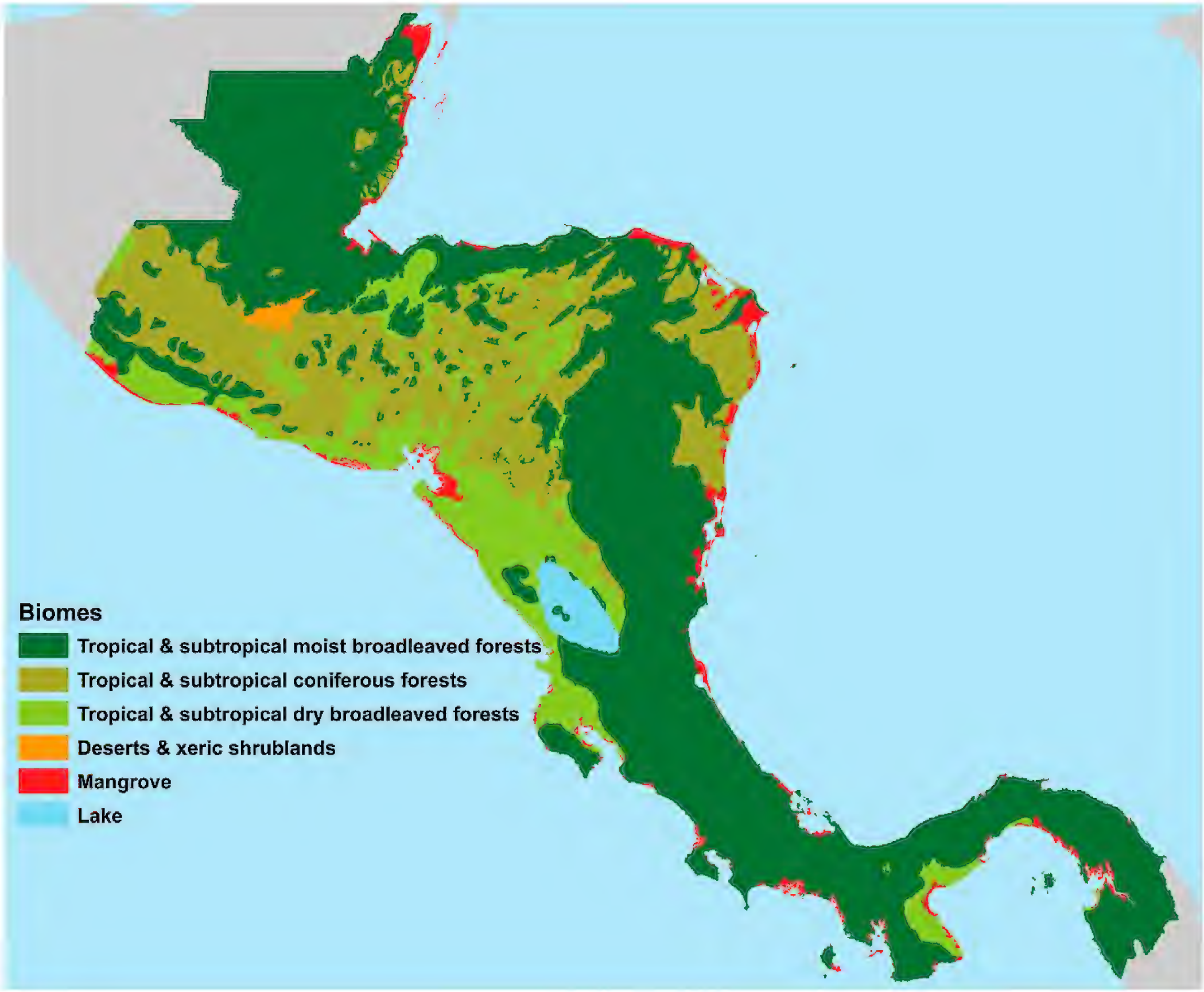

FIGURE 11. Biomes of Central America (after Dinerstein et al. 2017).

Sierra Madre de Chiapas, where it forms a transition between high-elevation pine-oak forests and low-elevation dry forests. It is characterized by high precipitation (average 2,796 mm/year; Corrales et al. 2015) and deep soil rich in organic material on calcareous rocks. It forms one of the richest and most diverse ecosystems in the region, with the vegetation dominated by dense moist forests rich in epiphytes and with almost no ground vegetation due to the shady conditions.

The ecoregion is heavily disturbed, and only 14% of the original cover is intact, with only 1% in protected areas (Corrales et al. 2015). The average annual habitat loss in 1990–2000 was among the highest in the region (1.16%; Corrales et al. 2015). Fires, extensive logging, agricultural practices, and human settlement are the main threats.

Gradstein and Váňa (1994) examined bryophyte communities on logs from the pine forest of Chiapas, close to the border with Guatemala, at an altitude of 2,400–2,500 m. These communities were composed of characteristic elements of boreal conifer forests found in North America and Europe. This community is defined by the presence of the boreal elements *Nowellia curvifolia* (Dicks.) Mitt.; *Crossocalyx hellerianus* (Nees ex Lindenb.) Meyl.; *Syzygiella autumnalis* (DC.) K.Feldberg, Váňa, Hentschel et Heinrichs; *Lepidozia reptans* (L.) Dumort.; and *Lophozia guttulata* (Lindb. et Arnell) A.Evans. Although some of the species

TABLE 1. Size of biomes and ecoregions occurring in Central America. All values (km^2) were calculated from Dinerstein et al. (2017). A dash (—) indicates either not occurring in the country or not applicable.

Biome and ecoregion	Global total	Central America	Belize	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama	Cocos Island
Tropical and subtropical moist broad-leaved forest	—	319,184	—	—	—	—	—	—	—	—
Petén-Veracruz moist forests	162,819	70,674	18,322	52,352	—	—	—	—	—	—
Sierra Madre de Chiapas moist forests	12,015	6,187	—	6,119	68	—	—	—	—	—
Central American montane forests	14,155	14,155	—	6,372	1,030	5,783	970	—	—	—
Central American Atlantic moist forests	94,989	94,989	—	9,086	—	35,972	49,930	—	—	—
Costa Rican seasonal moist forests	10,944	10,944	—	—	—	—	2,192	8,752	—	—
Isthmian-Atlantic moist forests	60,048	60,048	—	—	—	—	19,306	17,219	25,523	—
Isthmian-Pacific moist forests	29,453	29,453	—	—	—	—	—	9,241	20,212	—
Talamancan montane forests	16,710	16,710	—	—	—	—	—	9,397	7,313	—
Eastern Panamanian montane forests	2,229	2,229	—	—	—	—	—		2,229	—
Chocó-Darién moist forests	74,158	13,773	—	—	—	—	—	—	13,773	—
Cocos Island moist forests	22	22	—	—	—	—	—	—	—	22
Tropical and subtropical dry broad-leaved forest	—	73,909	—	—	—	—	—	—	—	—
Chiapas depression dry forests	15,154	971	—	971	—	—	—	—	—	—
Central American dry forests	71,565	67,771	—	7,023	8,712	20,273	25,489	6,273	—	—
Panamanian dry forests	5,167	5,167	—	—	—	—	—	—	5,167	—
Tropical and subtropical coniferous forests	—	123,789	—	—	—	—	—	—	—	—
Belizean pine forests	3,083	3,083	3,083	—	—	—	—	—	—	—
Central American pine-oak forests	118,591	101,292	—	31,450	11,433	47,330	11,079	—	—	—
Miskito pine forests	19,423	19,423	—	—	6,691	12,731	—	—	—	—
Desert and xeric shrublands	—	2,494	—	—	—	—	—	—	—	—
Motagua valley thornscrub	2,494	2,494	—	2,494	—	—	—	—	—	—
Mangrove forests	—	16,941	—	—	—	—	—	—	—	—
Mesoamerican Gulf–Caribbean mangroves	29,610	9,506	2,508	392	—	2,361	3,454	307	485	—
Southern Mesoamerican Pacific mangroves	8,233	5,529	—	1,188	673	784	950	832	1,103	—
South American Pacific mangroves	13,539	1,906	—	—	—	—	—	—	1,906	—

FIGURE 12. Ecoregions of Central America (after Dinerstein et al. 2017).

mentioned above have wider distributions in the Neotropics, this community seems limited to this area (Gradstein and Váňa 1994).

Central American Montane Forests

The Central American montane forests ecoregion (Figure 12) covers 14,155 km^2 (Table 1) of Guatemala (6,372 km^2), El Salvador (1,030 km^2), Honduras (5,783 km^2), and Nicaragua (970 km^2) at 1,800–4,000 m. It is made up of forest patches occurring in an island-like mosaic on the isolated tops and slopes of the highest mountains of northern Central America where the tropical climate gives way to a more temperate-like climate with fairly high precipitation (1,774 mm/year; Corrales et al. 2015). The vegetation is a mix of northern and southern elements combined with high endemism. These mountains are essentially the southern limits for several mainly boreal genera of conifers such as *Abies* Mill., *Juniperus* L., *Cupressus* L., and *Taxus* L., which tend to grow on the wetter, north-facing slopes near the tops of the higher mountains and form stands of large, tall trees interspaced with broad-leaved evergreen forests associated with southern tropical habitats (Powell and Palminteri 2023a). These isolated mountain tops support high levels of biodiversity and endemism.

The ecoregion is relatively intact, with 65% of the original cover remaining (Corrales et al. 2015). Most of the higher elevations of the Central American mountains have been declared

protected areas (47%), although enforcement, or even infrastructure, is missing in most cases (Powell and Palminteri 2023a).

The upper reaches of the mountains are typically too cool, wet, and/or rugged to be hospitable to human activities and are therefore still largely intact. The lower slopes of the montane ecoregion have already been heavily modified for cash crops, coffee, cattle grazing, and subsistence agriculture (particularly corn and beans), as well as for firewood (Powell and Palminteri 2023a), a process that is causing an accelerated loss of habitat. The average annual rate of deforestation in 1990–2000 was 1.05% (Corrales et al. 2015).

The liverwort flora of this ecoregion remains largely unexplored. Winkler (1967) studied the ecology of epiphylls in cloud forests of El Salvador and reported 66 liverworts and 12 moss species. In a cloud forest from Baja Verapaz, Guatemala, Freire et al. (2005) found 187 liverwort species along an altitudinal gradient of 300 m, from 1,620 to 1,925 m. More than 45% of the species were found on a single site, which suggests a high species turnover along the gradient. Totaling 159 species in 52 genera, foliose liverwort richness (23 species/6 genera) surpassed simple and complex thalloid liverworts (5 species/3 genera). An ecological study in the montane forest comparing liverwort composition in three successional vegetation types (mature forest, secondary forest, and crop) reported a total of 129 species (Pérez 2006). Ramírez (2007) found 117 species while evaluating the liverwort composition in two landscapes in Sierra de las Minas protected area.

Central American Atlantic Moist Forests

The Central American Atlantic moist forests ecoregion (Figure 12) is the second-largest ecoregion in Central America, covering 94,989 km^2 (Table 1) of the lowland coastal forests of Guatemala (9,086 km^2), Honduras (35,972 km^2), and Nicaragua (49,930 km^2). They show a tropical monsoon climate with an even annual temperature and a pronounced dry season. The mean annual precipitation is 2,333 mm (Corrales et al. 2015). Half of the ecoregion is closed-canopy broad-leaved evergreen rainforest, while the remainder is open-canopy evergreen forest or herbaceous wetland. It is in the middle range of species richness in Central America (Corrales et al. 2015), with a characteristic tropical evergreen forest with canopy trees reaching 50 m in height (Powell and Palminteri 2023b).

The once vast Atlantic lowland forests have been seriously fragmented in recent years, with only 53% of the original cover remaining, of which 20% is protected (Corrales et al. 2015). From 1990 to 2000, the ecoregion experienced deforestation at a rate less than 1% (0.94) per year (Corrales et al. 2015). The main drivers of habitat conversion are agricultural and infrastructure expansion, wood extraction, and other indirect causes (Geist and Lambin 2001). Flat areas with alluvial soils have come under banana cultivation, while forests on less fertile soils have more recently been logged and converted to cattle pasture. New access roads and incentives for migration to these areas in the past few decades have encouraged settlement and resource extraction in the area, such as logging. The northern part of Honduras has been particularly affected by agriculture and cattle-ranching expansion (Schipper 2023a).

Standley (1931) studied the vegetation, including bryophytes, in the Lancetilla Valley on the north coast of Honduras from sea level up to 200 m elevation. He reported 30 liverwort taxa that T. Herzog had identified. Later, Herzog (1938, 1951) identified and published many more species collected by P. C. Standley, many of them from Lancetilla Valley.

Costa Rican Seasonal Moist Forests

The Costa Rican seasonal moist forests ecoregion (Figures 12, 13C) is transitional between surrounding wet and dry forest regions, covering 10,944 km^2 (Table 1) in Nicaragua (2,192 km^2) and Costa Rica (8,752 km^2) on the Pacific slope between the crest of the central chain of volcanoes and the Pacific Ocean. The climate is a tropical monsoon with a pronounced dry season. The mean precipitation is 1,968 mm/year (Corrales et al. 2015). The deciduous vegetation distinguishes this ecoregion from wetter ecoregions to the south and east and quickly increases in dominance as one moves west from the cloud forest habitat of the mountain peaks. During the dry season, most canopy trees are leafless, and at lower elevations only riparian forests are evergreen (Powell et al. 2023a). The flora of this seasonal moist forest ecoregion changes rapidly over short distances as one moves away from the adjacent highland cloud forests, down the mountains into areas increasingly impacted by the rain shadow (Powell et al. 2023a).

The Costa Rican seasonally moist forests have been extensively altered by human intervention. Only 32% of the original cover remains, with only 12% protected (Corrales et al. 2015). Lowland areas have been cleared for cattle, while mountain slopes, regardless of their steepness, have been cleared to grow beans, corn, and coffee, as well as to support dairy cattle. Most of Costa Rica's population and a significant portion of Nicaragua's live within this ecoregion (Powell et al. 2023a). There has been substantial regeneration of lower-elevation hillsides following the collapse of Costa Rica's cattle industry in the past decade. However, above 800 m, the situation remains critical, with a growing human population (Powell et al. 2023a).

There are no liverwort inventories from this ecoregion. Haupt (1942) collected liverworts in this ecoregion, focusing on thalloid liverworts, and reported ten species and one hornwort.

Isthmian-Atlantic Moist Forests

The Isthmian-Atlantic moist forests ecoregion (Figures 12, 13F) covers 60,048 km^2 (Table 1) of lowlands below 500 m along the Caribbean coast in Nicaragua (19,306 km^2), Costa Rica (17,219 km^2), and Panama (25,523 km^2), extending to the Pacific side in Panama. Mean annual precipitation is as high as 3,187 mm (Corrales et al. 2015). The forest species are a mix of North American and South American taxa, as this region only

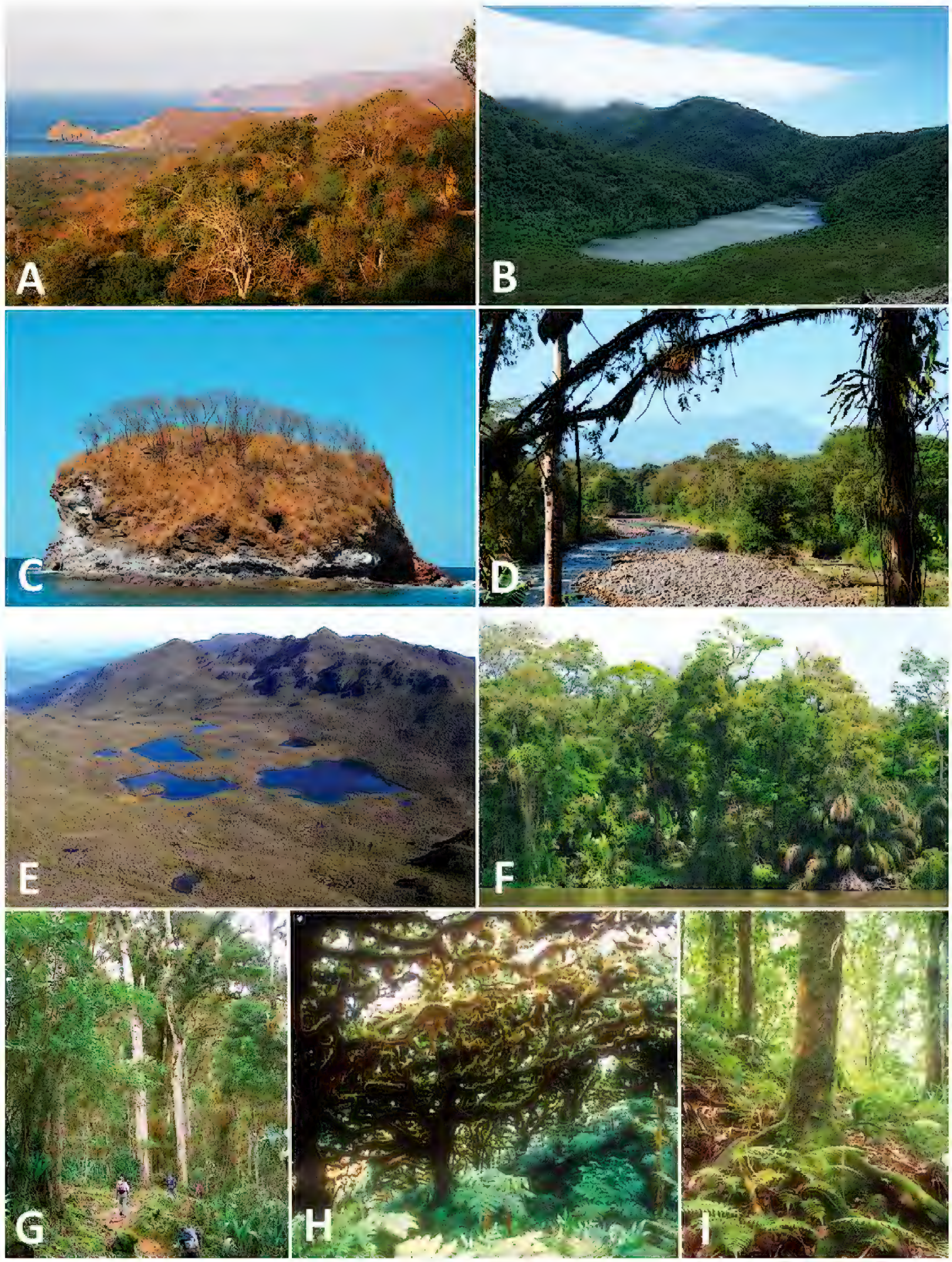

FIGURE 13. Central American landscapes and ecoregions. (A) Central American dry forest (Santa Elena Peninsula, Costa Rica). (B) Talamancan montane forest (Rincón de La Vieja National Park, Costa Rica). (C) Costa Rican seasonal moist forest (Isla Guayabo, Nicoya Gulf, Costa Rica). (D) Isthmian-Atlantic moist forest (Sarapiquí, Costa Rica). (E) Talamancan montane forest (páramo, Parque Nacional Chirripó, Costa Rica). (F) Isthmian-Atlantic moist forest (Tortuguero, Limón, Costa Rica). (G) Talamancan montane forest (páramo, Parque Nacional Chirripó). (H–I) Cocos Island, Costa Rica: (H) montane forest on Cerro Yglesias and (I) understory at lowland forest. Photos by G. Dauphin (A–G, I) and Jay Ireland (H).

became a land bridge in the past 3 million years. The forests have a complex structure that includes palms in the medium-canopy strata and a very rich epiphyte flora (Corrales et al. 2015). Seasonal swamp forests occur in the lowest and flattest areas in Nicaragua and northern Costa Rica (Powell et al. 2023b).

Much of the original rainforest has now become land for commercial or subsistence agriculture, and only 55% of the original ecosystem remains, with 16% protected (Corrales et al. 2015). The soil of the forests is subject to leeching. This and the trees feeding from the soil make it poor for farming or other agricultural purposes. Humans are still logging and clearing the area. Flat areas with alluvial soil are being used for banana farming, while hilly areas with less fertile soil are being logged and converted into pastures for cattle (Powell et al. 2023b).

Epiphyllous liverworts were studied in this ecoregion by Marino and Salazar Allen (1992), Mežaka et al. (2020), and Rodríguez-Castro and Flores (2021) on Barro Colorado Island, Panama, and by Lücking (1995) in Braulio Carrillo National Park, Costa Rica. Lücking (1995) reported 83 species of epiphyllous bryophytes from the Caribbean slope at the foothills of the Central Volcanic Cordillera. Her inventory included 78 species of Lejeuneaceae in 26 genera. Dauphin et al. (2022) studied liverworts from all substrates on Barro Colorado Island and reported 166 liverwort species on the ~15 km^2 surface area of the island. More than 80% of the species belong to Lejeuneaceae. *Cheilolejeunea rigidula* (Nees ex Mont.) R.M.Schust., the most common species found in the Amazon basin (Mota de Oliveira 2010), is also dominant on Barro Colorado Island. Studies on *Cyathodium* Kunze (Salazar Allen and Korpelainen 2006) were done in this ecoregion, and the type material of *Cyathodium bischlerianum* N.Salazar Allen, a species so far only known from Panama, comes from here (Salazar Allen 2001a).

Isthmian-Pacific Moist Forests

The Isthmian-Pacific moist forests ecoregion (Figure 12) covers 29,453 km^2 (Table 1) of the Pacific side of the lowlands from sea level to 2,282 m of the central mountains of southern Costa Rica (9,241 km^2) and western Panama (20,212 km^2). The climate is a tropical monsoon with a pronounced dry season. Its location in the Intertropical Convergence Zone makes it one of the wettest in the region, with a mean annual rainfall of 2,686 mm, with up to 6,000 mm at higher altitudes (Corrales et al. 2015). The mountains are an active volcanic zone, and most of the soils derive from the parent basalt bedrock. The ecoregion is covered by closed broad-leaved evergreen forest, open forests of various types and seasonal swamp forests in the lower elevations, grading into mangroves near the coast. As the meeting zone between North and South American floral communities, the area is one of very high biodiversity. Many species of South American affinity have their northern distribution limit here (Corrales et al. 2015).

Much of the rainforest has been cleared for subsistence agriculture and cattle grazing, and the annual deforestation rate was high (1.05%) between 1990 and 2000. Only 37% of the original area remains, and only 5% is protected (Corrales et al. 2015).

Salazar Allen and Chung (1997a, 1997b) signaled the occurrence of moisture indicator liverwort species, such as *Bryopteris filicina* (Sw.) Nees, *Fulfordianthus pterobryoides* (Spruce) Gradst., and species of *Bazzania* Gray, at the highest elevations of Isla Coiba, on the Panamanian Pacific. They also reported 18 liverwort species from lowland, Lejeuneaceae-dominated forests of Isla Canales de Tierra and Bahia Honda (Salazar Allen and Chung 2003).

Sonnleitner et al. (2009) made quantitative analyses of the factors driving the distribution of bryophytes in the phyllosphere of tropical forest, analyzing epiphylls on four monocotyledon phorophyte species. They reported 60 epiphyllous liverwort species, most of which were rare: only 14 species were found on more than ten hosts.

Talamancan Montane Forests

The Talamancan montane forests ecoregion (Figures 12, 13B,E,G) covers 16,710 km^2 (Table 1) in Costa Rica (9,397 km^2) and Panama (7,313 km^2), located in the highlands above 750 to 1,500 m, up to approximately 3,000 m, where they grade into páramo grasslands. The forest habitats of this ecoregion include Atlantic slope nonseasonal rainforests, Pacific slope seasonally dry but mostly evergreen forest, and "perpetually dripping" cloud forest on the mountain tops above approximately 1,500 m (Haber 2000). The high annual rainfall (average 3,049 mm), wind-blown mist, and frequent presence of clouds produce a lush, dense forest with a broken canopy and high species diversity. Abundant epiphytes cover tree branches, and tree ferns are common. The understory is characterized by the presence of several species of dwarf bamboo. Higher peaks and ridges exposed to moisture-laden trade winds support an elfin forest characterized by thick mats of bryophytes covering short, dense, gnarled trees (Haber 2000). The variety of vegetation types across steep elevational gradients and among the various mountain massifs in this ecoregion has produced very high regional plant biodiversity (high beta diversity; Haber 2000). The Talamanca Range alone is estimated to contain about 90% of Costa Rica's known flora. La Amistad International Park contains some 10,000 vascular and 4,000 nonvascular plant species, including several hundred endemic plant species (Davis et al. 1997). More than 30% of the ecoregion's flora is endemic to this area (Corrales et al. 2015).

This montane moist forest is one of Central America's most intact habitats, with 77% of its original forest cover remaining intact without significant fragmentation, and the rate of deforestation (0.41% annually, 1990–2000) is not among the highest in the region. More than 60% of the ecoregion is under protected areas (Corrales et al. 2015).

The premontane and lower-montane belt on the Cordillera Volcánica de Tilarán, Costa Rica, has received particular attention in the Reserva Biológica Bosque Nuboso de Monteverde, with multiple floristic and ecological studies on bryophytes, including those of Reed and Robinson (1971), Sillett et al. (1995),

Gradstein et al. (2001b), and Merwin et al. (2001). The Central American hornwort *Nothoceros superbus* J.C.Villarreal, Hässel et N.Salazar is only known from this ecoregion (Villarreal et al. 2007). Two species of *Cyathodium* Kunze previously known from the Paleotropics were reported from this area by Salazar Allen et al. (2004). In Panama, this altitudinal belt has been studied by Salazar Allen (2001b) and by Salazar Allen et al. (2021) in the Fortuna Forest Reserve. In General de División Omar Torrijos Herrera National Park (El Copé), Sierra et al. (2019a) studied the composition of metacommunities of epiphyllous bryophytes on *Piper grande* Vahl. and found 55 species, whose dispersal capacity best explained their assembly order on the substrate. Eight species (~15%) occurred in more than 50% of the sampled patches; ~22% of them were less frequent, and 16% were single occurrences, while most of the species (62%) were considered rare, occurring in less than 15% of the patches.

In the montane belt, bryophyte species attain their largest size and relative mass within the ecosystem and probably their greatest diversity along the altitudinal gradient. Most bryophyte floristic and ecological studies in Central America have been performed in this altitudinal belt. These include, among others, studies by Van Dunné and Kappelle (1998), Holz (2003, 2006), Gradstein and Holz (2005), Holz and Gradstein (2005a, 2005b), Markham and Fernández (2021), and Rodríguez-Quiel et al. (2022).

The greatest part of the bryophytic biomass in the montane belt is composed of mosses. In a secondary *Quercus* L. forest, Van Dunné and Kappelle (1998) found that six species accounted for up to 90% of the bryophyte biomass; among them the only liverwort was *Plagiochila raddiana* Lindenb. In some samples, *Plagiochila heterophylla* Lindenb. (=*Plagiochila macra* Taylor) could make up to 50% of the bryophyte mass (Markham and Fernández 2021). Holz (2003) studied the diversity and ecology of epiphytic bryophytes in mature and secondary *Quercus* L. forests and reported 251 species (128 liverworts, 122 mosses, and 1 hornwort). He studied bryophyte communities on standing trees of *Quercus copeyensis* C.H.Mull. and *Quercus costaricensis* Liebm. and compared secondary and primary forest. He found that "still after 40 years, one third (46 species) of the primary forest species had not re-invaded the secondary forest" (Holz 2003: 160). Holz's results echo those of Bowers (1970), who studied mosses in different ecosystems of this ecoregion and found more substrate diversity and thus greater species diversity in the secondary upper montane forest, where terrestrial species from the páramo would also occur.

Usually located above 3,000 m above sea level, the upper ecosystem in this ecoregion is called grassland páramo. Gradstein (1999a) listed 291 liverwort species in 88 genera and 34 families for this ecosystem distributed from Costa Rica to Peru. He stated that about 26.5% of the páramo species are exclusive and do not occur in other ecosystems. Dauphin (2007) listed 48 species from the pristine páramo of Cerro Fábrega. About 30% of the species were restricted to páramos, and more than 60% of them were known only from that area in Panama. Gradstein and Holz (2005) listed 117 mosses and 113 liverworts from the Costa Rican páramos but estimated that total bryophyte diversity may surpass 300 species. Most of the species are shared with Colombian páramos (98%), except *Aneura crumii* L.Söderstr., A.Hagborg et von Konrat, until now only known from the type.

Even though the ecosystems are protected, bryophytes, especially mosses, have suffered continuous extraction by the local population for yearly use in nativities or pots. Costa Rican laws allow the extraction of bryophyte species growing in pastures or on isolated trees to be collected and sold in the local market. Arrocha (1996) reported the use of 28 bryophyte species (including *Frullania* Raddi and *Lepidozia* Dumort. species) in this traditional practice in the Province of Chiriquí, Panama, and warned of its damage to bryophyte populations.

Eastern Panamanian Montane Forests

The Eastern Panamanian montane forests ecoregion (Figure 12) covers 2,229 km^2 (Table 1) in southeastern Panama, between 500 and 1,800 m. The precipitation is high, up to 5,000 mm/year, on the Caribbean side of the high mountains but a bit less in the central mountains. This ecoregion includes various vegetation types (marshes, swamp forests, semi-deciduous tropical forests, premontane wet forests, cloud and elfin forests) and has high species endemism (Powell et al. 2023c).

The ecoregion is relatively intact and stable, with only 0.1% of the region deforested between 1990 and 2000 and 96% of the original cover remaining; 63% of this region is in protected areas (Corrales et al. 2015). However, the construction of the Pan-American Highway through this region has caused rapid colonization from central Panama and subsequent deforestation at lower elevation (Powell et al. 2023c).

No bryophyte inventories are known from this ecoregion.

Chocó-Darién Moist Forests

The Chocó-Darién moist forests ecosystem (Figure 12) covers 74,158 km^2 (Table 1) in Colombia and eastern Panama (13,773 km^2) from sea level up to 1,000 m elevation. The region has extremely high rainfall (an average of 2,514 mm/year in Panama but up to 13,000 mm/year in some parts of Colombia), and the forests hold great biodiversity with a high level of endemism, including bryophytes (Frahm 2012a).

The region is relatively intact and stable, with as much as 98% of the original area intact (with only 0.05% annual deforestation between 1990 and 2000), although only 10% is protected (Corrales et al. 2015). The major threat to this ecoregion is deforestation. In the Darien region, the major threat is the construction of the Inter-American Highway and the degradation associated with it.

Gradstein and Salazar Allen (1992) studied liverwort communities along an altitudinal transect on Cerro Pirre. Their collection sites extended from 50 to 1,200 m altitude. They found 86 liverwort species across all sites. The greatest number of species was found in the submontane belt (800–1,100 m), including

the "Chocó elements" *Fulfordianthus pterobryoides* (Spruce) Gradst. and *Luteolejeunea herzogii* (Buchloh) Piippo. In the elfin forest at the highest altitude, liverworts were the major part of the epiphytic biomass. The dominant Lejeuneaceae from the lower-elevation belts are replaced by robust species of *Bazzania* Gray, *Herbertus* Gray, *Calypogeia* Raddi, and *Plagiochila* (Dumort.) Dumort., which form massive colonies.

Cocos Island Moist Forests

The Cocos Island off the Pacific coast of Costa Rica is covered completely by the Cocos Island moist forests (22 km^2; Table 1, Figure 13H,I). The climate is strongly influenced by the equatorial countercurrent and extremely wet, with average annual rainfall higher than 6,000 mm and rain throughout the year (Dambrosio 2023). The island has dense vegetative cover of moist tropical forest, with 235 known species of vascular plants, and 70 of these, or nearly 30%, are endemic (Dambrosio 2023). There are 122 liverwort species registered, which is very high for such a small and remote island.

The entire island is a national park, and most of its natural habitat can be considered intact, despite the negative influence of introduced plants and animals (Dambrosio 2023).

Bryophytes from all substrates were studied by Dauphin (1995, 1999), while Bernecker-Lücking (2000) focused on the epiphylls. Ranging from 0 to 700 m elevation, the Cocos Island forest shows at its upper elevation a submontane or montane character, as described for the Chocó-Darién moist forest (Gradstein and Salazar Allen 1992). The dominant Lejeuneaceae from the lower belts make up most of the diversity (60%) of this species-rich island. Complex thalloid liverworts are absent, and simple thalloid liverworts are represented by single species of *Aneura* Dumort. and *Riccardia* Gray. Although present on Galápagos (Evans 1902a; Gradstein 2021), the common Neotropical *Bryopteris filicina* (Sw.) Nees is absent from Cocos Island. Only *Lophocolea fragrans* (Moris et De Not.) Gottsche, Lindenb. et Nees subsp. *cocosana* G.Dauphin, Gradst. et M.I.Morales has its distribution restricted to Cocos Island.

Tropical and Subtropical Dry Broad-Leaved Forests

The tropical and subtropical dry broad-leaved forest biome covers 73,909 km^2 (Figure 11, Table 1) and consists of three ecoregions (Dinerstein et al. 2017). Although they occur in climates that are warm year-round and still receive much rain annually, they have a marked dry season that lasts several months. Forests with deciduous trees are largely leafless during the dry period.

Chiapas Depression Dry Forests

The Chiapas depression dry forests ecoregion (Figure 12) covers 15,154 km^2 (Table 1) in Mexico with a small part in Guatemala (971 km^2). It consists of lowland forests between 420 and 800 m.

Only a few portions of intact forest still remain (Valero et al. 2018). Cattle grazing and human settlements have largely converted the rest. The deforestation rate between 1990 and 2000 was not high (0.30% annually), but earlier deforestation was severe; little habitat remains, and no part of the ecoregion is protected in Guatemala (Corrales et al. 2015).

There are no bryophyte studies from this ecoregion in Central America.

Central American Dry Forests

The Central American dry forests ecoregion (Figure 12, 13A) is by far the largest dry forest ecoregion in the area, with a cover of 71,565 km^2 (Table 1) in Mexico, Guatemala (7,023 km^2), El Salvador (8,712 km^2), Honduras (20,273 km^2), Nicaragua (25,489 km^2), and Costa Rica (6,273 km^2). It previously formed a continuous strip in the lowlands and submontane areas of the Pacific coast of Central America. It is characterized by a dry period of five to eight months, "with average annual precipitation between 1,000 and, 2,000 mm and a generally bimodal pattern of rainfall, with a shorter and a longer dry period" (Andraka 2023). Forests are semideciduous with up to 30 m high trees, mostly Fabaceae, which often are associated with nitrogen-fixing bacteria. The lower story includes more evergreen trees, and the understory is often made up of thorny trees. The ecoregion is rich in endemic plant species (Andraka 2023).

Humans have settled in these areas for at least 11,000 years (Bullock 1995), with a legacy of high anthropogenic disturbance over a long time. Today, cattle grazing and agricultural expansion are the biggest threats. The deforestation rate is still high (0.60% annually between 1990 and 2000), and only 22% still remains, with only 2% protected (Corrales et al. 2015).

A single study of bryophytes is available for this large and disturbed ecoregion (Dauphin and Grayum 2005). They reported 21 liverworts and 34 moss species from the Santa Elena Peninsula and Murciélago Islands in northern Costa Rica. This peninsular area, protected as part of the Guanacaste Conservation Area, contains a mosaic of dry forest ecosystems. In the lowland areas of the Santa Elena Peninsula there are small stands of primary dry lowland forest. In this forest, bryophytes are absent from tree trunks and grow on logs. The rare *Cephaloziella subtilis* (Lindenb. et Gottsche) Steph., previously known from Sonora, Mexico, seems restricted to this habitat and was the only liverwort found. The upper region of the Santa Elena Peninsula, at 700 m, consists of a tropical moist forest island surrounded by dry forest areas. Widespread liverworts are abundant at higher elevations, growing on trunks, twigs, and rocks, including *Frullania intumescens* (Lehm. et Lindenb.) Lehm. et Lindenb., *Cheilolejeunea rigidula* (Nees ex Mont.) R.M.Schust., *Marchesinia brachiata* (Sw.) Schiffn., and *Bryopteris filicina* (Sw.) Nees. Lejeuneaceae is the dominant family at higher elevations, where 18 species of foliose liverworts were found. In contrast, the only liverwort found on the dry calcareous islands of the Murciélago

archipelago is the complex thalloid species *Riccia vitalii* Jovet-Ast, growing abundantly under the tree cactus *Stenocereus aragonii* (F.A.C.Weber) Buxb. On the serpentine Isla Pelada close by, no liverworts were found.

Panamanian Dry Forests

The Panamanian dry forests ecoregion (Figure 12) is a small ecoregion covering 5,167 km^2 (Table 1) around the Gulf of Panama from sea level up to 800 m. It is characterized by a five-month dry period and an annual precipitation of about 1,500 mm. The original forests consist mostly of open broad-leaved deciduous forests with a marked annual cycle. Annual bryophytes of the moss family Pottiaceae and the liverwort *Riccia* L. species thrive in the region (Schipper 2023b).

This ecoregion is significantly altered by cattle ranching, fires, and hunting, and only 5% remains unaltered, although almost all of that is protected (Corrales et al. 2015).

No bryophyte studies have been done in this ecoregion.

Tropical and Subtropical Coniferous Forests

Tropical and subtropical coniferous forests (Figure 11) cover about 123,789 km^2 of Central America (Table 1) from Belize to Nicaragua, where three ecoregions can be recognized (Olson et al. 2001). They are characterized by relatively low precipitation with a high proportion of conifers.

There are no bryophyte studies known from this biome in Central America.

Belizean Pine Forests

The Belizean pine forests ecoregion (Figure 12), sometimes called pine savannas, is a small ecoregion covering 3,083 km^2 (Table 1) in Belize. The pine forest is adapted to xeric, acidic, and nutrient-poor conditions (Horwich and Lyon 1990) and requires a periodic low-intensity burn for regeneration (Perry 1991).

More than 70% of the original cover remains, and 32% is under protection (Corrales et al. 2015).

Central American Pine-Oak Forests

The Central American pine-oak forests ecoregion (Figure 12) covers 118,591 km^2 (Table 1) in Mexico, Guatemala (31,450 km^2), El Salvador (11,433 km^2), Honduras (47,330 km^2), and Nicaragua (11,079 km^2). It is situated between 600 and 2,300 m; the temperature ranges from 14°C to 25°C, and the precipitation is between 900 and 3,700 mm/year. The forests are dominated by species of *Pinus* L. and *Quercus* L., with varying mixtures of species of *Ostrya* Scop., *Alnus* Mill., and *Liquidambar styraciflua* L. (Peréz et al. 2008).

Only 47% of the original forest remains and is highly fragmented due to high population density. The loss of natural habitat was one of the highest in Central America, 1.16% annually between 1990 and 2000. Although some areas remain intact (especially in Honduras), only 2% is protected (Corrales et al. 2015). This ecoregion is highly diverse and has a high degree of endemism (Peréz et al. 2008).

Miskito Pine Forests

The Miskito pine forests ecoregion (Figure 12) covers 19,423 km^2 (Table 1), restricted to the Caribbean coast of Honduras (6,691 km^2) and Nicaragua (12,731 km^2). The ecoregion is much less species rich than the surrounding areas due to a combination of poor soils and frequent burning. The burning events and vegetation clearances maintain the dominance of a single tree species, the Caribbean pine (*Pinus caribaea* Morelet), giving it a savanna-like appearance (Powell et al. 2023d).

More than 95% of the ecoregion's forests remain, although only 4% are protected, with a moderate deforestation rate of 0.41% between 1990 and 2000 (Corrales et al. 2015).

Desert and Xeric Shrublands

Deserts and xeric shrublands cover only 2,494 km^2 (Figure 11, Table 1) of Central America, all in one ecoregion confined to Guatemala.

There are no bryophyte studies from this biome in Central America.

Motagua Valley Thornscrub

The Motagua Valley thornscrub ecoregion (Figure 12) in southeast Guatemala is the driest ecoregion in Central America and experiences a rain shadow from the trade winds caused by the surrounding mountains (such as the Sierra de las Minas Biosphere Reserve, the main natural barrier to humidity coming from the Atlantic) that leads to the extreme dry conditions of the region (Nájera Acevedo 2006). The annual rainfall is less than 500 mm, falling mainly from May to September, with the rest of the year being dry. The most representative vascular plant families are Asteraceae, Euphorbiaceae, Fabaceae, and Poaceae, while species typical in the Motagua valley are *Guaiacum sanctum* L., *Caesalpinia velutina* (Britton et Rose) Standl., *Bursera schlechtendalii* Engl., *Bursera graveolens* (Kunth) Triana et Planch., *Acacia farnesiana* Wall., *Prosopis juliflora* (Sw.) DC., *Amphipterygium adstringens* (Schltdl.) Standl., *Stenocereus pruinosus* (Otto ex Pfeiff.) Buxb., *Pereskia lychnidiflora* DC., *Nopalea guatemalensis* Rose, *Pilosocereus leucocephalus* (Poselg.) Byles et G.D.Rowley, *Cordia dentata* Poir., and *Cordia truncatifolia* Bartlett (Véliz et al. 2004).

The valley has been almost entirely converted to irrigated croplands, while subsistence agriculture prevails on the slopes. Although more than 60% of the original cover remains, only 22% is protected (Corrales et al. 2015).

Mangrove Forests

Mangrove forests cover 16,941 km² (Table 1, Figure 11) of Central American coastal areas on both the Caribbean and Pacific sides. Three main types occur in Central America (Dinerstein et al. 2017). Mangrove forests are heavily threatened worldwide today (United Nations Environment Programme 2023).

Mesoamerican Gulf–Caribbean Mangroves

All mangrove forests on the Caribbean side of Central America are classified as the Mesoamerican Gulf–Caribbean mangroves ecoregion (Figure 12), which covers 29,610 km² (Table 1) in the Caribbean, Mexico, Belize (2,508 km²), Guatemala (392 km²), Honduras (2,361 km²), Nicaragua (3,454 km²), Costa Rica (307 km²), and Panama (485 km²). This is a heterogeneous ecoregion classified by several subregions.

This ecoregion is severely disturbed, and large areas have been cleared to give access to "waterfront" infrastructure (Schipper 2023c).

Salazar Allen et al. (2022) provided the first bryophyte inventory of this ecoregion in Central America, reporting 26 liverworts and 7 moss species. The liverwort flora found in the mangroves of Bocas del Toro comprise mostly foliose species and typical sun epiphytes, including widespread, usually xerotolerant species from the genera *Acrolejeunea* (Spruce) Schiffn., *Frullanoides* Raddi, and *Lopholejeunea* (Spruce) Steph. The simple thalloid liverwort *Riccardia regnellii* (Ångstr.) K.G.Hell grows on the lower stems of the fringe mangrove *Laguncularia racemosa* (L.) C.F.Gaertn. and on decomposing logs or mangrove roots in areas exposed at low tides.

Southern Mesoamerican Pacific Mangroves

Most of the mangrove forests on the Pacific coast of Central America belong to the Southern Mesoamerican Pacific mangroves ecoregion (Figure 12), which covers 8,233 km² (Table 1) in Mexico, Guatemala (1,188 km²), El Salvador (673 km²), Honduras (784 km²), Nicaragua (950 km²), Costa Rica (832 km²), and Panama (1,103 km²). This is a heterogeneous ecoregion with several subregions.

The mangrove forests have largely been altered or destroyed for tourism development, settlements, shrimp farming, etc. For example, in Guatemala only 165 km² of the forest remains. Pollution and sediment runoff from soil erosion and pollution from fertilizers and pesticides also have a large impact on these habitats (Schipper 2023d).

South American Pacific Mangroves

The South American Pacific mangroves ecoregion (Figure 12) covers 13,539 km² (Table 1) in Peru, Ecuador, Colombia, and Panama (1,906 km²).

This ecoregion faces the same threats as the previous mangrove ecoregions.

EXPLORATION OF THE LIVERWORT AND HORNWORT FLORA OF CENTRAL AMERICA

Early Explorations

The early botanical explorations in Central America, as in other areas of Latin America, were carried out since the first part of the nineteenth century by European collectors and botanists. The collected material was therefore mostly deposited in European herbaria, and the results consequently appeared in European periodical publications.

The specimens of *Symbiezidium transversale* (Sw.) Trevis., *Riccardia fucoidea* (Sw.) C.Massal., and *Marchantia chenopoda* L., held in the herbarium of the Naturhistorisches Museum in Vienna (W) and collected in Guatemala by the Austrian noble Emanuel von Friedrichsthal (1809–1842) between 1840 and 1841, may represent the oldest liverwort specimens collected in Central America. Only a few of von Friedrichsthal's Central American collections of liverworts have been examined by bryologists.

The most important pioneer in Central American botany was the Dane Anders Sandoe Oersted (1816–1872), who explored Costa Rica and Nicaragua between 1846 and 1848. Many of his liverwort collections were examined by the German Johann Bernhard Wilhelm Lindenberg (1781–1851). One month after Lindenberg's death, his friend Georg Ernst Ludwig Hampe (1795–1880) published the results of their research, including 21 species for Costa Rica (9 new species), 4 for Nicaragua (1 new species), and 4 from Jamaica (2 new species; Hampe 1851a, 1851b). Most species he described are now considered synonyms, except for the common *Frullania convoluta* Lindenb. et Hampe. Oersted's collections were compiled in the first listing of Central American liverworts (Müller 1851). It included the taxa reported by Hampe and *Anthoceros flexivalvis* Gottsche et Nees (=*Phaeoceros flexivalvis* (Gottsche et Nees) Hässel) from Montes del Aguacate, Costa Rica, which remains the only specimen of the species found in Central America so far.

The Costa Rica resident and German physician Karl Hoffmann (1823–1859), in addition to fauna, collected bryophytes and vascular plants. His collection from Volcán Barva (1855) is one of the oldest dated collections and served as the type for the description in 1915 of *Schisma vulcanicum* Warnst. (=*Herbertus acanthelius* Spruce). The specimen survives at the herbarium in Botanic Garden and Botanical Museum Berlin-Dahlem (Dauphin 2005).

Berthold Carl Seemann (1825–1871), a naturalist on the expedition of the HMS *Herald*, collected bryophytes in Panama between 1845 and 1851 (Stotler et al. 1998) and died in Nicaragua. Some of his undated collections are held in the

herbarium of the New York Botanical Garden, for example, *Lejeunea pulla* Mitt., *Plagiochila crispula* Nees, and *Plagiochila ludoviciana* Sull. In 1854 he published the second list of liverworts available for Central America, with 15 species, based on his collections identified by William Mitten (1819–1906; Mitten 1854b).

In 1875 Helmuth Polakowsky (1847–1917) published "Bryophytas et cormophytas costaricenses anno 1875 lectas." In his volume, liverworts were identified by Carl Moritz Gottsche (1808–1892). It included 13 species, with the description of *Radula costaricensis* Gottsche (only known from the type) and a mention of *Lejeunea piriflora* Gottsche ex Pol. (nom. nud., =*Cheilolejeunea piriflora* Schiffn., an obscure name that was not included in the recent revision of Neotropical *Cheilolejeunea* by Bastos 2017 and Bastos and Gradstein 2020b).

Hans von Türckheim (1853–1920) emigrated to Guatemala in or around 1878 to be a coffee farmer and became German consul in Cobán. Therefore, most of his collections were made in the department of Alta Verapaz. He collected liverworts in Guatemala until 1908, and some of his specimens were identified by Franz Stephani (1842–1927). Based on Türckheim's specimens, Stephani described *Diplasiolejeunea brunnea* Steph., *Frullania guatemalensis* Steph., *Frullania tuerckheimii* Steph. (=*Frullania montagnei* Gottsche), *Metzgeria tuerckheimii* Steph. (=*Metzgeria leptoneura* Spruce), *Plagiochila guatemalensis* Steph., *Plagiochila confusa* Steph. (=*Plagiochila raddiana* Lindenb.), *Plagiochila tuerckheimii* Steph. (=*Plagiochila subplana* Lindenb.), *Plagiochila verapazana* Steph. (=*Plagiochila superba* (Nees ex Sprengel) Mont. et Nees var. *superba*), *Plagiochila viridis* Steph. (=*Plagiochila deflexirama* Taylor), and *Radula guatemalensis* Steph. (=*Radula portoricensis* Steph.).

Based on collections by Friedrich Carl Lehmann (1850–1903), Stephani (1894a) reported two species from Guatemala and three from Costa Rica collected between 1881 and 1882, together with a greater series of specimens from Colombia.

From 1889 until 1904 the Swiss botanist Adolphe Tonduz (1862–1921), with colleagues Henri Pittier (1857–1950) and Paul Biolley (1886–1908), collected plants in different regions of Costa Rica that were used to publish the first, unfinished Costa Rican flora, the *Primitiae Florae Costaricensis*. Based on their collections, Stephani (1893c) reported 56 liverwort species for Costa Rica and described 6 new species: *Aneura tripinnata* Steph. (=*Riccardia glaziovii* (Spruce) Meenks), *Anthoceros cristosporus* Steph. (=*Nothoceros vincentianus* (Lehm. et Lindenb.) J.C.Villarreal), *Chiloscyphus pittieri* Steph. (=*Leptoscyphus amphibolius* (Nees) Grolle), *Frullania pittieri* Steph., *Schisma costaricense* (Steph.) Steph. (=*Herbertus pensilis* (Taylor) Trevis.), and *Plagiochila rhombifolia* Steph. (=*P. diversifolia* Lindenb. et Gottsche).

Some Cocos Island liverworts were available from early expeditions that also visited Galapagos. Robinson (1902) mentioned the occurrence of *Plagiochila anderssonii* Ångstr. (=*Plagiochila raddiana* Lindenb.) but did not cite any specimens.

Bryological Research over the Past 100 Years

By the turn of the twentieth century, especially after the expeditions of Paul C. Standley (1884–1963) in the mid-1920s, the affluence of North American plant collectors and botanists to Central America increased. A whole series of floristic and ecological studies contributed to our present knowledge of the region; some of the most relevant works are mentioned below. Costa Rica and Panama emerge as the best-explored countries in Central America even though bryological research has been rather inconsistent.

Costa Rica

On the basis of bryophyte collections received in 1925 from Paul C. Standley (then a curator at the Smithsonian Institution, Washington, D.C., USA), Theodor Herzog (1880–1961) produced the first floristic treatment of Central American Marchantiophyta, "Hepaticae Standleyanae Costaricenses et Hondurenses," published in two parts (Herzog 1938, 1951). The first part included more than 100 species from Costa Rica and Honduras. He described the new genus *Mnioloma* Herzog, 30 species, 16 varieties, and 5 forms new to science (Herzog 1930, 1938). Thirteen years later, after World War II, he published the second part, adding another 178 taxa, with the description of 25 new species, 11 varieties, and 4 forms (Herzog 1951). Herzog's contribution to the knowledge of the liverwort flora of Central America is very significant, although many of his species were reduced to synonymy by later authors (e.g., Fulford 1963a, 1966, 1968, 1976; Grolle 1972c; Gradstein 1994; Reiner-Drehwald and Goda 2000; Heinrichs 2002; Dauphin 2003, 2005). Herzog introduced several (mostly invalid) forms that need taxonomic reevaluation.

Arthur W. Haupt (1894–1987) collected liverworts in Turrialba and the Central Plateau of Costa Rica in the mid-1940s. His collections focused mostly on thalloid plants, including 19 species, among which were eight new records of complex and simple thalloid liverworts and two hornworts (Haupt 1942).

Based on collections by Stephen Walter James (1894–1984) and his family in the mid-1960s and early 1970s in Monteverde, Puntarenas, later sold by Clyde F. Reed (1918–1999) to the Smithsonian Institution in Washington, D.C., Reed and Robinson (1971) published an account of the bryophytes of the region. Their publication included 77 species of liverworts, including the rare *Nowellia reedii* H.Rob. (Robinson 1970). Morales and Griffin (1983) reported 54 species of liverworts from higher elevations at Poás Volcano, including *Gymnomitrion moralesae* Váňa, known only from that locality and Mexico.

Based on literature, holdings of local herbaria (Costa Rican National Herbarium [CR] and Universidad de Costa Rica [USJ]) and visits to the Missouri Botanical Garden (MO) and the University of Florida Herbarium in Gainesville (FLAS), the first comprehensive list of Costa Rican Marchantiophyta was prepared

by Morales (1991) and included 426 taxa from mainland Costa Rica and Cocos Island. Following fieldwork by S. Robbert Gradstein (b. 1943) during his first visit to Costa Rica in 1993, a series of contributions was published that increased the number of liverwort species known locally. These contributions include works by Gradstein et al. (1994), who reported 90 species new to Costa Rica, including 35 new to Central America; Dauphin et al. (1998), who listed 37 species new to Costa Rica; and Holz et al. (2001), who reported 35 species new to Costa Rica, including 15 new to Central America.

Furthermore, important ecological research has been done in Costa Rica in recent years that, in addition to adding new species records, has yielded detailed descriptions of bryophyte synusia in different ecosystems, such as tropical lowland rainforest, tropical premontane and montane rainforest, and tropical dry forest (see "Phytogeography of Central America"). The papers resulting from these studies include Lücking (1995), Sillett et al. (1995), Dauphin (1999), Gradstein et al. (2001a), Holz et al. (2001, 2002), Merwin et al. (2001), Dauphin and Grayum (2005), Holz and Gradstein (2005a, 2005b), Sonnleitner et al. (2009), and Markham and Fernández (2021).

Collections from Cocos Island are cited sparsely in the taxonomical literature and in a few papers such as Howe (1934) and Clark (1953a). Fosberg and Klawe (1966) and Weber (1993) made the first checklists, but recent bryological studies on the island were started by Andrea Bernecker in 1992 (Bernecker-Lücking 2000) and Gregorio Dauphin in 1994 (Dauphin 1995, 1999). Bernecker studied epiphyll communities, while Dauphin focused on bryophytes growing on all other substrates. These studies summed up 105 species of liverworts and 1 hornwort from Cocos Island but recognized no endemics. A single subspecies, *Lophocolea fragrans* (Moris et De Not.) Gottsche, Lindenb. et Nees subsp. *cocosana* G.Dauphin, Gradst. et M.I.Morales, was only recently described (Dauphin et al. 2018) and is not found elsewhere.

Dauphin (2005) summarized all previous records in "Catalogue of Costa Rican Hepaticae and Anthocerotae." Besides adding records from the literature, it added new localities and collections from the former InBio herbarium (now at CR). It included 582 species of liverworts and hornworts from continental Costa Rica and Cocos Island. The publication added 26 new records and excluded 49 dubious ones.

Panama

Early collections from Barro Colorado Island by James Zetek (1886–1959) and Otis E. Shattuck were listed by Haynes (1933). Her list included 11 species, all Lejeuneaceae, except *Frullania gibbosa* Nees and *Plagiochila asplenioides* (L.) Dumort. Based on collections mostly from Barro Colorado Island by Arthur Merton Chickering (1887–1974), Bernard Lowy (1916–1992), and Carroll Willam Dodge (1895–1988), Crum and Arzeni (1953) listed 34 liverworts from Panama. Salazar Allen et al. (1988) reported the occurrence of 20 liverworts species from Barro Colorado Island. Gradstein and Salazar Allen (1992) studied bryophytes along an altitudinal gradient on Cerro Pirre, Darién, adding 40 species to the Panamanian liverwort flora. Stotler et al. (1998), in the first comprehensive Panamanian liverwort checklist besides earlier records, included the results of a bryophyte workshop held in Panama in 1996 (Raeymaekers et al. 1996) to sum up 289 taxa, including 93 new to Panamá. Salazar Allen (2001a) reported *Cyathodium bischlerianum* N.Salazar Allen, a new species for science that still remains known from Panama only. Five species of *Prionolejeunea* (Spruce) Schiffn. (Ilkiu-Borges 2006) and 10 species of *Metzgeria* Raddi (Costa 2008) were subsequently reported as new for the country. Dauphin et al. (2006) added 28 records of Marchantiophyta and 8 hornworts and described *Cololejeunea panamensis* G.Dauphin et Pócs as new to science from Barro Colorado Island. *Cololejeunea tixieri* M.I.Morales et G.Dauphin (=*Myriocoleopsis tixieri* Pócs et Gradst.) and *Cololejeunea tamasii* Schäf.-Verw. were also described as new to science from Western Panama (Morales and Dauphin 1998; Schäfer-Verwimp 2012). Dauphin (2007) added 24 further records and listed liverworts from a pristine páramo area. Alfons Schäfer-Verwimp (b. 1950) and his wife collected in ~30 Panamanian localities in 2010 and 2013 and added 107 species, 2 subspecies, and 1 variety of Marchantiophyta, including 27 new to Central America (Schäfer-Verwimp 2014). Based on an inventory in a premontane rainforest in the province of Coclé, Dauphin et al. (2015) added 13 further species to the liverwort flora of Panama and a species new to science: *Prionolejeunea clementinae* Ilk.-Borg., G.Dauphin et N.Salazar Allen (Ilkiu-Borges et al. 2018). The workshop "Taxonomy and Biology of Tropical Bryophytes" at the Smithsonian Tropical Research Institute's Bocas del Toro Research Station in 2017 was the first botanical study focused on the bryophyte diversity of Panamanian mangroves. Workshop participants reported 26 species and 2 varieties of liverworts associated with mangroves and 2 new species records for the country: *Ceratolejeunea confusa* R.M.Schust. and *Frullanoides mexicana* van Slageren (Salazar Allen et al. 2022). Recent exploration and research in the mountain areas of Chiriquí by students and faculty of the University of Chiriquí have led to new species records and species new to science, including those published by Arrocha et al. (2020), Fossati et al. (2020) and Guerra-Batista et al. (2020). Further bryophyte floristic studies have focused on the coastal southwest region of Veraguas Province. Salazar Allen and Chung (2006) reported 18 species of liverworts and a hornwort from Bahia Honda and Canales de Tierra Islands. Based on specimens collected between 1995 and 1996, Salazar Allen and Chung (1997a, 1997b) reported 13 genera and 9 species of liverworts from Coiba Island.

Many botanists of diverse nationalities have collected in what is now the Fortuna Forest Reserve, located in the northeast of Chiriquí Province. The construction of Fortuna Dam and the creation of the Reserve contributed to the increase in botanical activity in the region. The Panamanian government financed

environmental and ecological studies in the area in 1976 before the logging for the dam construction started. Noris Salazar Allen (b. 1947) oversaw the collection and identification of bryophytes and lichens. In 1987, with the collaboration of her students Marla Johnston and Dilia Santamaría, Salazar Allen collected around 1,150 samples of bryophytes in five logging areas that were subsequently inundated to increase the dam's reservoir. Using the information obtained in these field expeditions and data gathered by multiple studies in the area since the construction of the dam, Salazar Allen et al. (2021) cited 174 species of liverworts (including 2 subspecies and 4 varieties) and 8 species of hornworts, registered from 16 collection points inside the Reserve. Other localities where important collecting activity has been done include La Cuenca del Canal de Panamá; Parque Nacional General de División Omar Torrijos Herrera, or "El Copé" (Coclé); Parque Nacional Santa Fe (Veraguas); Isla Colón (Bocas del Toro); Parque Nacional Altos de Campana (Panamá Oeste); El Valle de Antón (Coclé); Parque Nacional Cerro Hoya (Veraguas, Los Santos); Cerro Chucantí Private Nature Reserve (Darién); Palo Seco Forest Reserve (Naso Tjër Di comarca); Parque Internacional La Amistad (Chiriquí); Silla Panda en Cotito (Renacimiento District, Chiriquí) at the border with Costa Rica; Serranía de Tabasará (Chiriquí); Cerro Tigrero (Coclé); Cerro Turega (Coclé); Escudo de Veraguas (Bocas del Toro); and Volcán Barú (Chiriquí). However, the work of identifying the specimens collected at these sites is still in progress or pending.

The main repositories of the bryophyte specimens collected in Panama during all these expeditions are the Herbario de la Universidad de Panamá, Panamá City (PMA); the Herbario de la Universidad Autónoma de Chiriquí, David, Panama (UCH); theMissouri Botanical Garden, Saint Louis (MO); the U.S. National Herbarium, Washington, D.C. (USA); the New York Botanical Garden (NY); and the Field Museum of Natural History, Chicago (F), as well as several European herbaria. A working group from UCH, led by Clotilde Arrocha, is focusing on the bryological exploration of Western Panama, where Rodríguez-Quiel et al. (2022) recently made detailed ecological studies of the bryophytes in Volcán Barú, including two new records for Panama, *Harpalejeunea cinchonae* (Nees) Schiffn. and *Solenostoma sphaerocarpum* (Hook.) Steph., and two new records for Central America, *Frullania tetraptera* Nees et Mont. and *Plagiochila cleefii* Inoue.

Guatemala

Two American botanists, Paul C. Standley and Julian Alfred Steyermark (1909–1988), traveled to Guatemala in 1938 to carry out the first proper botanical expedition for the Flora of Guatemala project of the Field Museum of Natural History of Chicago (Stafleu and Cowan 1985; Freire 2006). They collected liverworts from nearly every department that were deposited in, among others, the F and NY herbaria. Some of those specimens were examined by Margaret Hannah Fulford (1904–1999) and others. To date, most of these liverwort collections have not been revised. A publication comparable to the "Mosses of Guatemala" (Bartram 1949) based on Standley's and Steyermark's collections has not been prepared for the liverworts.

Aaron John Sharp (1904–1997), a bryologist and professor at the University of Tennessee, traveled to Guatemala in 1944–1946 as part of a project entitled "Expedition for Correlation of Flora of the Southern Appalachian and Mexico-Central American Highlands" (Delgadillo 1986; Freire 2006). Sharp collected liverworts in the highlands between 1,250 and 3,500 m, an altitudinal belt considered highly rich and diversified (Bartram 1949).

Interest in the study of liverworts increased with a project led by the Guatemalan bryologist Virginia Freire in the 2000s. The study was developed in the Biotopo del Quetzal, a montane cloud forest reserve located in the department of Baja Verapaz. Freire et al. (2005) reported 187 species of liverworts in 61 genera. Her students Felipe Ramírez and Mervin E. Pérez did their bachelor's theses on liverworts. Ramírez collected liverworts from three departments (Zacapa, El Progreso, and Izabal) within the Sierra de las Minas Biosphere Reserve (Ramírez 2007), while Pérez collected in a montane forest near the communities of Chelemhá I and II in Alta Verapaz (Pérez 2006).

In 2007, personnel of the University of San Carlos (USCG) herbarium made an expedition to the departments of Huehuetenango and Quiché, visiting Laguna Brava, San José Nueva Frontera, Laguna Maxbal, Barillas, Todos Santos, the Cuchumatanes plateau, and communities that constitute the Triángulo Ixil. In this expedition Pérez led the collection of liverworts and other bryophytes. Some of this material is still not identified. In 2007, Pérez directed a floristic inventory of the liverworts of three protected areas: Cerro Cahuí, El Zotz, and Laguna del Tigre, all in the department of Petén. This project was financed by the National Secretary of Science and Technology in 2008 and was accomplished by Julio Morales Can (herbarium curator) and María Victoria Ríos, a former student of Virginia Freire (Morales 2011).

Pérez (2009) listed 219 species in 28 families and 82 genera from Guatemala based on the literature, online databases, and field collections from 2005 to 2007. Remarkably, he concluded that 50% of earlier collections were known from a single locality.

Belize

Based on collections by J. J. White III in Belize (formerly known as British Honduras) along the Punta Gorda coastal line from October 1932 to February 1933, the first modern list of Lejeuneaceae for Belize was produced. It included 27 species (Fulford 1938). A total of 49 genera and 65 species of liverworts from Belize were reported based partly on collections by Bruce Allen (b. 1952) at Doyle's Delight in 1993 (Whittemore and Allen 1996). In 1996 collections from Belize were provided by Eggers and Timm, adding 20 new records of epiphyllous species (O'Shea et al. 1997; Eggers et al. 2001, 2004).

Honduras

No recent studies of liverworts or hornworts in Honduras were published after Herzog (1938, 1951; see "Costa Rica"), but references to Standley's specimens are found in the literature. Bruce Allen from MO made collecting visits to Honduras in 1992, 1993, and 1996. His liverwort collections were available to G. Dauphin for determination during his visit to Missouri in 2017. The results are included in this publication.

El Salvador

The ecological studies on epiphylls by Winkler (1967) remain a major contribution to the bryology of the Central American Isthmus and worldwide. In his inventory of epiphylls in a cloud forest he found 66 records of liverworts new to El Salvador, including the description of six new species: *Brachiolejeunea acuta* S.Winkl., *Crossotolejeunea rotundata* S.Winkl., *Diplasiolejeunea involuta* S.Winkl., *Diplasiolejeunea montecristensis* S.Winkl., *Leucolejeunea nana* S.Winkl., and *Ptychocoleus reflexus* S.Winkl. All of them except *Diplasiolejeunea involuta* are now synonyms.

Rosadelia Búcaro (Naturalis Biodiversity Center) collected bryophytes in El Salvador between 2006 and 2014. Several of her collections were made available to G. Dauphin for determination in 2016.

Nicaragua

There are no bryological studies published from Nicaragua. Missouri Botanical Garden's phanerogamist Warren Douglas Stevens (b. 1944) has occasionally collected bryophytes in Nicaragua since the late 1970s. His collections and those of other collectors were available to G. Dauphin for determination in 2017, and the results are presented in this work.

FLORISTICS OF CENTRAL AMERICAN LIVERWORTS AND HORNWORTS

Hornwort Diversity and Biogeographical Patterns

A total of 19 species in 4 families and 7 genera of hornworts are known from Central America. There are no species in this division collected from more than half of Central America, with no records from El Salvador, Honduras, or Nicaragua. From Guatemala three species are known from three genera in two families. Both Panama and Costa Rica have seven genera in four families represented.

Biogeographical patterns of hornworts remain understudied globally because of the lack of collections, reliable identifications, and local expertise. In the past 15 years, global interest in the group has led to the development of expertise across the globe, especially in Latin America (Villarreal and Renzaglia 2006a, 2006b; Villarreal et al. 2007; Villarreal and Renner 2014; Peñaloza-Bojacá et al. 2019). The diversity of hornworts remains low in comparison to that in other regions with a long tradition of bryologists dedicated to studying the group. For example, the nearly 19 species found in Central America pale in comparison with those found on the Indian Subcontinent (34 species; Villarreal et al. 2010c). However, this is a mere reflection of the long interest in hornworts by Indian bryologists since the late 1960s. In Central America, the best-investigated countries are Costa Rica and Panama. It is possible that the number of hornwort species will increase with more investigations.

With the limited data at hand from Central America, a few fascinating patterns emerge. *Notothylas dissecta* Steph. is a disjunct species between Central America and India (Udar and Singh 1979). The two collections are morphologically identical regarding sporophyte characters; the only difference is the presence of a pyrenoid in Central American collections. Indian collections seem to lack this structure.

Additionally, we confirm a number of widespread Neotropical species (including from the southern United States), such as *Anthoceros lamellatus* Steph., *A. tuberculatus* Lehm. et Lindenb., *Dendroceros crispus* (Sw.) Nees, *D. crispatus* (Hook.) Nees, *Leiosporoceros dussii* (Steph.) Hässel, *Nothoceros aenigmaticus* J.C.Villarreal et K.D.McFarland, *N. vincentianus* (Lehm. et Lindenb.) J.C.Villarreal, and *Phaeomegaceros fimbriatus* (Gottsche) R.J.Duff, J.C.Villarreal, Cargill et Renzaglia. In light of recent genomic data, it is plausible that widespread hornwort species represent, in fact, a cluster of closely related cryptic species (Dawes et al. 2020).

The case of *Nothoceros aenigmaticus* is particularly interesting because of its distribution. The species was described from North Carolina (USA), and it was recently found in high elevations from Mexico, Costa Rican subpáramos, and Andean páramos. The species is completely clonal in the United States but produces abundant sporophytes in Latin American localities. A recent study confirmed the stepwise dispersal from the Andes into Mexico and the United States in the Plio-Pleistocene (Alonso-García et al. 2020). Two elements exclusively Neotropical are *Nothoceros canaliculatus* (Pagán) J.C.Villarreal, Hässel et N.Salazar and *Nothoceros schizophyllus* (Gottsche ex Steph.) J.C.Villarreal, both closely related species and undercollected throughout their range. *Phaeoceros dendroceroides* (Steph.) Hässel is a rarely collected taxon, originally described from Chile. It has long been confused with the Californian *Phymatoceros bulbiculosus* (Brot.) Stotler, W.T.Doyle et Crand.-Stotl., because they share similar spore ornamentation. However, *Phaeoceros dendroceroides* has a more delicate and monoicous thallus with delicate sporophytes. It contrasts with *Phymatoceros bulbiculosus* in sexual condition, a strap-shaped thallus, and the presence of long-stalked tubers. It is quite possible that Neotropical collections of *Phaeoceros dendroceroides* represent a new species, but further work is needed.

Finally, there are a few cosmopolitan species such as *Notothylas breutelii* (Gottsche) Gottsche, *Notothylas orbicularis*

(Schwein.) Sull., *Notothylas javanica* (Sande Lac.) Gottsche, and *Phaeoceros carolinianus* (Michx.) Prosk. All these species are found on almost every continent and in man-made habitats (especially *Notothylas* Sull.). *Phaeoceros carolinianus*, in contrast, tends to be in perturbed habitats, and it is very likely that it represents a complex of cryptic species.

A single hornwort is endemic in Central America, *Nothoceros superbus*, from Cartago in Costa Rica.

Liverwort Diversity and Biogeographical Patterns

The total diversity and number of bryophyte taxa in the tropical American region are probably the highest in the world (Tan and Pócs 2000). According to Tan and Pócs, the north–south-oriented Cordilleran mountain range in Central America and the Andean mountain range provided important migratory pathways for North American and Patagonian bryophytes to enter and enrich the floral diversity of this region.

Gradstein et al. stated that the northern part of Central America (Guatemala and Honduras) is characterized by the occurrence of many holarctic species reaching their southernmost distribution limit and a "great number of Andean taxa reaching their northernmost extent" (2001b: 25). Floristic patterns of some Central American countries showing strong floristic affinities between Costa Rica and the northern Andes have been documented by Kappelle et al. (1995) for vascular plants, by Gradstein et al. (1994) and Gradstein (1998, 1999a) for liverworts, and by Holz (2003) for bryophytes. A more recent study including vascular plants and animal clades suggested that the Amazon domain was the primary source of Mesoamerican biodiversity (Antonelli et al. 2018).

Geographical Distribution Patterns

Due to insufficient knowledge of the geographical distribution of all the species listed, any analysis of this kind is only tentative. We recognize among the Central American liverworts the following geographical distribution areas (Table 2).

Temperate Species

Northern Temperate Species (Holarctic). Also called the "Cordilleran Path" (Schuster 1983), this group is constituted by species that during the Late Cenozoic cooling, "managed to migrate southwards into the mountains of tropical America and occur at high elevations in Cerro de La Muerte and other peaks" (Gradstein et al. 1994: 85). With species restricted to the montane belt and páramos, they usually occur above 2,500 m in our region (Schuster 1983; Gradstein and Váňa 1987; Gradstein et al. 1994; Holz et al. 2001; Gradstein 2021). Gradstein (2021) listed 22 species in this group, 14 of which also occur in Central America. Species occurring above 4,000 m altitude are absent in our area. Table 2 shows the most typical examples.

Southern Temperate Species. The species in this group reach their northernmost limit in the mountains of Costa Rica (Gradstein et al. 1994). This group includes species occurring at middle and high elevations in Central America and belonging to southern temperate genera such as *Clasmatocolea* Spruce, *Lepicolea* Dumort., *Pseudocephalozia* R.M.Schust., and *Triandrophyllum* Fulford et Hatcher (Table 2).

Pantemperate Species. Represented by a few mostly thalloid liverworts, pantemperate species include *Cephaloziella divaricata* (Sm.) Schiffn., *Lunularia cruciata* (L.) Dumort. ex Lindb., *Marchantia polymorpha* L., *Ricciocarpos natans* (L.) Corda, and *Targionia hypophylla* L.

Tropical Species

Wide Tropical Species. Wide tropical species are the second most diverse group among the Central American liverwort species, after the Neotropical elements. They include also amphi-Atlantic, pantropic, and amphi-Pacific species (Table 2). According to Gradstein (2021), this group is growing as a result of taxonomic and floristic work.

Neotropical Species. Most of the species listed in this catalog fall into this category. It accounts for 72% of the Colombian and Ecuadorian liverwort flora (Gradstein 2021). Due to the lack of information on the distribution of the individual species within Central America and the Neotropics, any attempt to classify all taxa into these categories can only be tentative. It may be that within the Neotropics, some well-known species may act as indicators of more restricted distribution patterns (Table 2).

Neotropical Andean Species. Many species of this group reach their northernmost limit in the mountains of Costa Rica, although some species have managed to cross the Nicaraguan depression and extend into Guatemala and Mexico (Gradstein et al. 1994). About 27% of the bryophytes had an Andean-centered distribution in the upper montane *Quercus* L. forests of the Talamanca Cordillera (Holz 2003). They were estimated to account for 17% of the Costa Rican liverwort flora (Gradstein et al. 1994).

Neotropical Chocó Elements. Some of these species in this group have been indicated to be subendemic to the Pacific Coastal Region of Colombia, although some extend their distribution northward on the Caribbean slope up to Costa Rica and Belize (Gradstein 2021; Table 2). Others were considered rare and endangered in Costa Rica by Gradstein et al. (1994).

Neotropical Amazonian Elements. Some species considered endemic to Amazonia (Gradstein 2021) extend their distribution northward at lowland and middle elevations, usually less than 1,000 m altitude on the Central American Caribbean slope (Table 2).

Neotropical Guyana Shield Elements. Guyana Shield elements, specifically *Micropterygium leiophyllum* Spruce (Costa Rica) and *Micropterygium parvistipulum* Spruce (Panama), are abundant in the understory of the Amazon forest.

TABLE 2. Geographical elements of the liverwort flora of Central America.

Element	Indicator species	Elevation
Northern temperate	*Bazzania tricrenata*; *Blepharostoma trichophyllum* (L.) Dumort.; *Cephalozia bicuspidata* (L.) Dumort.; *Cephaloziella hampeana*; *Diplophyllum obtusatum*; *Fuscocephaloziopsis catenulata* (Huebener) Váňa et L.Söderstr.; *Fuscocephaloziopsis lunulifolia*; *Lepidozia reptans* (L.) Dumort.; *Marsupella emarginata* (Ehrh.) Dum.; *Mesoptychia turbinata* (Raddi) L.Söderstr.; *Nowellia curvifolia* (Dicks.) Mitt.; *Pallavicinia lyellii* (Hook.) Gray; *Schistochilopsis incisa* (Schrad.) Konstant.; *Solenostoma sphaerocarpum* (Hook.) Steph.; *Syzygiella autumnalis* (DC.) K.Feldberg, Váňa, Hentschel et Heinrichs	Middle and high elevations (>2,500 m)
Southern temperate	*Clasmatocolea vermicularis* (Lehm.) Grolle; *Syzygiella sonderi* (Gottsche) K.Feldberg, Váňa, Hentschel et Heinrichs; *Lepicolea ochroleuca* (Spreng.) Spruce; *Marchantia berteroana* Lehm. et Lindenb.; *Pseudocephalozia quadriloba* (Steph.) R.M.Schust.; *Triandrophyllum subtrifidum* (Hook.f. et Taylor) Fulford et Hatcher var. *subtrifidum*; *Triandrophyllum subtrifidum* var. *trifidum* (Gottsche) Solari	Middle to high elevations
Wide tropical (pantropical, amphi-Atlantic, amphi-Pacific)	*Cyathodium cavernarum* Kunze, *Cyathodium foetidissimum* Schiffn., *Dumortiera hirsuta* (Sw.) Nees, *Lejeunea flava* (Sw.) Nees, *Lepidozia cupressina* (Sw.) Lindenb., *Plagiochila bifaria* (Sw.) Lindenb., *Pseudomarsupidium decipiens* (Hook.) Grolle	Usually middle to high elevations
Andean Neotropical	*Ceratolejeunea grandiloba* J.B.Jack et Steph.; *Drepanolejeunea aurita* Bischl.; *Phaeomegaceros fimbriatus* (Gottsche) R.J.Duff, J.C.Villarreal, Cargill et Renzaglia	High elevations
Guyana Shield Neotropical	*Micropterygium leiophyllum* Spruce, *Micropterygium parvistipulum* Spruce	Low to middle elevations
Chocó Neotropical	*Luteolejeunea herzogii* (Buchloh) Piippo, *Fulfordianthus pterobryoides* (Spruce) Gradst., *Symbiezidium dentatum* Herzog., *Archilejeunea ludoviciana* (De Not.) P.Geissler et Gradst., *Lepidolejeunea grossepapulosa* (Steph.) Piippo., *Ceratolejeunea pungens* Steph.	Low to middle elevations
Amazonian Neotropical	*Calypogeia densifolia* (Steph.) Steph., *Calypogeia tenax* (Spruce) Steph., *Cololejeunea surinamensis* Tixier, *Cyclolejeunea foliorum* (Nees) Grolle, *Diplasiolejeunea buckii* Grolle, *Leptolejeunea obfuscata* (Spruce) Steph., *Cololejeunea winkleri* (M.I.Morales et A.Lücking) Pócs, *Micropterygium leiophyllum* Spruce, *Micropterygium parvistipulum* Spruce	Low to middle elevations (<1,000 m)
Central America (restricted)	*Ceratolejeunea panamensis* Fossati, C.J.Bastos et A.R.Benitez; *Cheilolejeunea norisiae* G.Dauphin et Gradst.; *Cololejeunea berneckerae* Pócs; *Cololejeunea moralesiae* (Bern.-Lück.) Bernecker et Pócs; *Cololejeunea standleyi* Herzog; *Cololejeunea tamasii* Schäf.-Verw.; *Cyathodium bischlerianum* N.Salazar; *Diplasiolejeunea montecristensis* S.Winkl.; *Drepanolejeunea biocellata* A.Evans var. *biocellata*; *Frullanoides mexicana* van Slageren; *Fulfordianthus evansii* (Fulford) Gradst.; *Lejeunea reflexistipula* var. *costaricensis* (Steph.) M.E.Reiner; *Lejeunea grolleana* (Bernecker) R.L.Zhu et W.Ye; *Lejeunea tamasii* M.E.Reiner, N.Salazar Allen et C.Chung; *Lophocolea fragrans* (Moris et De Not.) Gottsche, Lindenb. et Nees subsp. *cocosana* G.Dauphin, Gradst. et M.I.Morales; *Mnioloma rhynchophyllum* Herzog; *Plagiochila eurydictyon* Herzog; *Prionolejeunea clementinae* Ilk.-Borg., G.Dauphin et N.Salazar Allen	Mostly middle elevations and lowlands

Neotropical Caribbean Elements. This group is very elusive because of the poor status of knowledge of the Caribbean liverwort flora. Central America shares 588 species with this region, making it the second group of affinity after South American species. This component was estimated to be 7% for the Costa Rican liverwort flora (Gradstein et al. 1994).

Central American Elements. There are no endemic liverwort genera in Central America (Gradstein et al. 2001a). About 5% of the Costa Rican liverwort flora was considered restricted to Central America, and endemism has been estimated at 2.5% in Costa Rica (Gradstein et al. 1994). Central America has been listed among the most important hotspots for angiosperms but "[does] not exhibit spectacular levels of endemism in bryophytes" (Patiño and Vanderpoorten 2018).

The "proven endemics" include species that were accepted in recent revisions (Pócs 1988). An increasing number of Neotropical floristic inventories and floras and the unification of the taxonomical nomenclatures done by Söderström et al. (2016a) made us recognize species previously considered to be "endemics" as more widespread taxa. An example is the rare *Nowellia reedii* H.Rob., which was previously considered to be endemic to Costa Rica (Schuster 1983a) but was then reported from Venezuela (Fulford 1972; Schuster 2002; Morales et al. 2007), Brazil (Amazonas; Costa et al. 2020), and Peru (Graham et al. 2016). *Drepanolejeunea aurita* Bischl. is another example; it was recently reported as endemic to the Colombian páramos (Gradstein 2021) but is now reported as new to our region.

Thirteen species have their distribution restricted to reduced areas in Central America and may fit the criterion of endemic taxa, usually known from more than one collection and locality (Table 2). Twenty additional species whose distributions are so far known to be limited to Central America have recently been revised but are known only from the type material. These include, among others, the páramo element *Aneura crumii* L.Söderstr., A.Hagborg et von Konrat. A third group with 17 species is only known from type material; most of the species belong in genera such as *Frullania* Raddi, *Lejeunea* Lib., and *Plagiochila* (Dumort.) Dumort. Their material has not been recently examined or included in recent taxonomic studies. Some were lectotypified by Söderström and Hentschel (2023).

Even if we consider all those taxa to be possible endemics or restricted to Central America, their overall importance remains low, from 1.5% to 6% of the total accepted species. This percentage is very low compared to the 10% endemism reported from Colombia and Ecuador (Gradstein 2021). This number is concordant with the statement that Central America does not exhibit spectacular levels of endemism in bryophytes (van Zanten 1976, 1978; van Zanten and Pócs 1981; Patiño and Vanderpoorten 2018).

FUTURE RESEARCH

There are still extensive regions of Central America not yet explored by bryologists, such as the Mosquitia in the departments of Atlántico Norte (Nicaragua) and Gracias a Dios (Honduras). These are rich wetland areas with diverse ecosystems along the Caribbean coast that have recently been intensively deforested (Aide et al. 2012). Detailed exploration of new wet and dry ecosystems in Central America will increase the number of species known for each country and the isthmus.

A more precise figure of the diversity of liverworts and hornworts of Central America cannot be given until the most species-rich and unresolved genera are treated. Examples of these genera are *Plagiochila* (Dumort.) Dumort., *Lejeunea* Lib., *Radula* (Dumort.) Dumort., and *Riccardia* Gray. *Plagiochila* (Dumort.) Dumort. is the largest genus of Marchantiophyta, and there is no comprehensive treatment for the Neotropics. In Colombia, for instance, Uribe and Gradstein (1998) reported 175 species of *Plagiochila* (Dumort.) Dumort. Almost two decades later, about two-thirds of the records were shown to be synonyms or misidentifications (Gradstein 2016). We can expect similar results in Central America, once the taxonomy of the mentioned genera is cleared.

A few research sites and biological stations in Central America, such as La Selva Biological Station in Costa Rica and Barro Colorado Island in Panama, provide the necessary conditions to conduct studies such as monitoring community structure and dynamics and the potential effects of disturbance and climate change using permanent plots and laboratory experiments (Dauphin et al. 2024). Establishment of field plots for long-term ecological observation of species reproduction and dispersal would improve understanding of the biogeographic patterns of the species. Barcoding bryophyte flora and analyzing population genetics would help us to understand the genetic diversity of what we now consider widespread taxa.

STATISTICS

This catalog reports 865 taxa (plus 42 doubtful taxa and 38 taxa rejected from the area; Table 3) in 135 genera. Knowledge is uneven across countries. For example, 713 taxa are known from Costa Rica, and yet only 86 are known from Nicaragua. The reason is partly more varied and species-rich vegetation types in some countries but also partly the uneven exploration of the different countries. For example, no taxa are known from three provinces of El Salvador, four provinces of Honduras, four provinces of Nicaragua, and three provinces of Panama, while at least some taxa are known from all provinces of Guatemala, Belize, and Costa Rica (Table 3, Figure 14).

About one-third of the 126 liverwort genera reported from Central America belong to Lejeuneaceae (45 genera), and 40 genera are represented by a single species in the region. The most diverse genus is *Plagiochila* (Dumort.) Dumort. (88 species), followed by *Lejeunea* Lib. (63 species), *Frullania* Raddi (53 species), *Cololejeunea* (Spruce) Steph. (47 species), *Metzgeria* Raddi (34 species), *Radula* (Dumort.) Dumort. (34 species), and *Cheilolejeunea* (Spruce) Steph. (32 species).

TABLE 3. Number of accepted, questioned, and rejected taxa in each country and first-order administrative division and number of species reported as new in this publication. A dash (—) indicates no taxon.

Country, division, and Central America total	Accepted taxa	New taxa	Doubtful taxa	Excluded taxa
Guatemala	376	9	38	7
Alta Verapaz	199	1	18	2
Baja Verapaz	159	1	4	2
Chimaltenango	13	6	1	—
Chiquimula	8	—	2	—
El Petén	29	3	2	—
El Progreso	51	—	4	—
Escuintla	3	—	—	—
Guatemala	3	—	—	—
Huehuetenango	79	4	—	1
Izabal	55	1	8	1
Jalapa	4	—	—	—
Quetzaltenango	51	10	1	1
Quiché	55	—	1	1
Retalhuleu	4	—	—	—
Sacatepéquez	19	1	—	—
San Marcos	30	—	—	—
Santa Rosa	3	—	—	—
Sololá	7	—	1	—
Suchitepéquez	11	1	1	—
Totonicapán	6	—	—	—
Zacapa	64	1	9	—
Belize	123	32	6	2
Belize	7	7	—	—
Cayo	56	15	2	1
Corozal	2	—	—	—
Orange Walk	3	—	1	—
Stann Creek	16	1	1	—
Toledo	65	35	1	1
El Salvador	102	22	1	—
Ahuachapán	11	3	—	—
Cabañas	1	1	—	—
Chalatenango	7	—	—	—
Cuscatlán	—	—	—	—
La Libertad	2	2	—	—
La Paz	—	—	—	—
La Unión	1	1	—	—
Morazán	1	1	—	—
San Miguel	—	—	—	—
San Salvador	7	2	—	1
Santa Ana	83	19	1	—
San Vicente	4	—	—	—
Sonsonate	2	2	—	—
Usulután	—	—	—	—
Honduras	191	51	15	6
Atlántida	100	19	2	3
Choluteca	—	—	—	—
Colón	—	—	—	—
Comayagua	48	18	—	—
Copán	7	3	—	—
Cortés	27	15	—	—
El Paraíso	5	—	1	—
Francisco Morazán	21	4	—	—
Gracias a Dios	2	—	—	—
Intibucá	2	1	—	—
Islas de la Bahia	—	—	—	—
La Paz	2	1	—	—
Lempira	25	21	—	—
Ocotepeque	7	7	—	—
Olancho	12	9	—	—
Santa Bárbara	3	2	—	—
Valle	—	—	—	—
Yoro	5	4	—	—
Nicaragua	81	45	4	1
Atlántico Norte	16	14	—	—
Atlántico Sur	14	7	—	—
Boaco	4	4	—	—
Carazo	—	—	—	—
Chinandega	5	—	—	1
Chontales	12	7	—	—
Estelí	12	9	—	—
Granada	15	6	—	—
Jinotega	9	6	—	—
León	—	—	—	—
Madriz	—	—	—	—
Managua	4	2	—	—
Masaya	—	—	—	—
Matagalpa	15	13	—	—
Nueva Segovia	2	2	1	—
Rivas	2	—	—	—
Río San Juan	3	1	—	—
Costa Rica	647	10	38	24
Alajuela	200	8	9	6
Cartago	305	13	4	5
Guanacaste	124	6	5	1
Heredia	170	1	4	3
Limón	155	3	3	—
Puntarenas	286	12	4	5
San José	347	7	6	7
Panama	504	6	20	8
Bocas del Toro	59	21	1	10
Chiriquí	332	4	9	3
Coclé	180	—	1	1
Colón	28	11	—	—
Darién	115	1	2	2
Emberá-Wounaan comarca	1	—	—	—
Guna Yala comarca	—	—	—	—
Herrera	—	—	—	—
Los Santos	8	—	—	—
Naso Tjër Di comarca	53	4	1	—
Ngäbe-Buglé comarca	13	2	—	—
Panama	106	7	9	—
Panama West	135	1	2	3
Veraguas	97	—	—	1
Cocos Island	126	25	4	6
Total for Central America	845	16	38	48

(*continued*)

TABLE 3. (*Continued*)

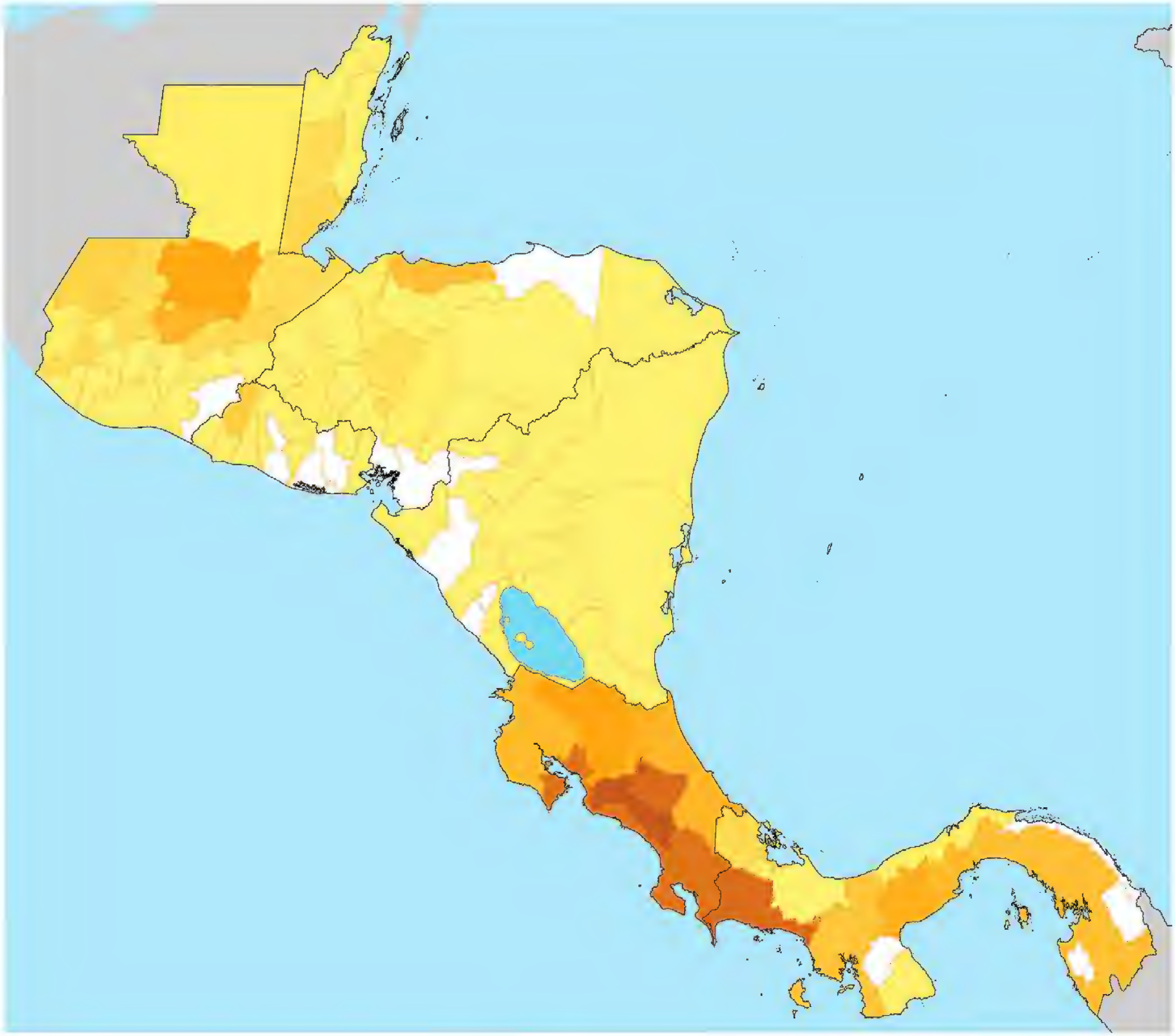

FIGURE 14. Known species richness in provinces of Central American countries. The darker the color, the greater the number of taxa known from that area (see Table 4). No liverwort or hornwort taxa are known from provinces in white.

Gradstein et al. (2001b) considered Central America the second-richest area of tropical America with respect to the total number of genera, surpassed only by the northern Andes. They estimated 140 liverwort genera for this region. We report a lower number of genera here. This discrepancy can be explained by the fact that in the past 22 years several genera have fallen into synonymy and local species have been transferred into other genera. Within the first category (synonymized genera) are *Amphilejeunea* R.M.Schust. (=*Lejeunea* Lib.); *Aphanolejeunea* A.Evans (=*Cololejeunea* (Spruce) Steph.); *Aureolejeunea* R.M.Schust.; *Cyrtolejeunea* A.Evans, *Cystolejeunea* A.Evans, and *Omphalanthus* Lindenb. et Nees (=*Cheilolejeunea* (Spruce) Steph.); *Echinocolea* R.M.Schust. (=*Lejeunea* Lib.); *Iwatsukia* N.Kitag. (=*Odontoschisma* (Dumort.) Dumort.); *Physantholejeunea* R.M.Schust. (=*Otigoniolejeunea* (Spruce) Schiffn.); and *Szweykowskia* Gradst. et M.E.Reiner (=*Plagiochila* (Dumort.) Dumort.). Several species formerly placed in the genus *Jungermannia* L. have been transferred into other genera such as

Mesoptychia (Lindb.) A.Evans and *Solenostoma* Mitt. Other species in genera formerly considered characteristic for Central America (i.e., known from a single Neotropical region but occurring in other parts of the world; Gradstein et al. 2001b) have been transferred to other genera. They are *Cryptothallus hirsutus* H.A.Crum = *Aneura crumii* L.Söderstr., A.Hagborg et von Konrat (Söderström et al. 2012b), and *Stenorrhipis rhizomatica* Herzog = *Kymatocalyx rhizomaticus* (Herzog) Gradst. et Váňa (Gradstein and Váňa 1999). All genera accepted here also occur outside Central America.

Comparing numbers among countries in Table 3 reveals the "paucity of information" on the liverwort and hornwort diversity of Central America mentioned by Stotler et al. (1998). The country with the largest territory, Nicaragua (130,375 km^2), is the least explored. Considering its large land area (108,889 km^2) and various elevation ranges (from 0 to 4,220 m), Guatemala should have a greater number of species than those now reported. The same can be said of Honduras, which has unexplored ecosystems of Yucatecan-petenense vegetation and no records from dry areas. Although in the past decade Panama has been more intensively explored than Costa Rica, the latter shows a greater liverwort diversity due to its greater extensions of páramo and upper montane ecosystems distributed along three heterogeneous mountain ranges.

In comparison with Colombia (1,038,700 km^2) and Ecuador (276,841 km^2), with 872 and 792 species, respectively (ELPT unpublished database 2024.07.01), the species richness in Central America (865 species on 522,800 km^2) is about the same. However, at the generic level, the liverwort flora in Colombia and Ecuador is richer, with 148 genera reported (126 in Central America). The largest country in Latin America, Brazil (8,358,140 km^2), has an estimated 700–750 liverwort species in 139 genera (Gradstein and Costa 2003), which probably is too low (the unpublished ELPT database has about 975 accepted taxa 2023.08.06). These results reinforce the notion that richness is largely driven by habitat diversity and not by surface area (Gradstein 2021).

In contrast to the mosses (Geffert et al. 2013), von Konrat et al. (2008) found a significant latitudinal gradient of species richness for global liverwort diversity.

MATERIALS AND METHODS

This catalog lists all taxa reported from Central America as defined above (Figures 1, 3–10).

Names

Nomenclature and taxonomy follow the "World Checklist of Hornworts and Liverworts" (Söderström et al. 2016a) with some updates from recent literature. All taxonomic and nomenclature changes known to us until 31 December 2022 are included.

Synonyms and Types

For each accepted taxon we give all names used for the taxon in the literature citing Central American specimens together with their basionym. All names are followed by the author(s) of the names and a full bibliographic citation of the name. Heterotypic synonyms relevant to Central America (=) are displayed below every accepted species name; basionyms and homotypic synonyms are marked with the symbol ≡. Types of each name are cited in full when the types (or other original material in the case of invalid names) are from Central America. For those, we have tried to identify the type specimen (primarily holotypes and lectotypes) and cite it fully with locality, collector, herbarium, and the URL for its virtual herbarium record whenever we have been able to find the information. All herbarium acronyms follow Index Herbariorum (https://sweetgum.nybg.org/science/ih/).

Sources of Reports

Sources of the records include more than 1,500 publications found through searching the ELPT database of hornwort and liverwort nomenclature, taxonomy, and distribution. We cite localities, collectors, and herbaria where specimens are stored from the papers reporting them. In addition, we include many unpublished herbarium specimens that we have seen and identified, especially those new for a country or province.

Monographs and revisions of genera and families are sources of many records in this catalog and are all listed in the references. In addition, many ecological and sociological studies reported species, some that are new for a province or even for a country. Country records from early specimens are dispersed in the taxonomical literature. Some of them constitute the only information source for scarcely known species. The most relevant sources for Central America are alphabetically listed in Table 4 by taxon, including revisions and monographs spanning more than 50 years of bryological research. This is complemented by additional records published until 31 December 2022.

Geographical Units

For each taxon, cited reports are separated by country (in bold uppercase letters), with each country in a different paragraph. Within countries the list is separated by first-order administrative divisions (in underlined uppercase letters). There are 22 first-order administrative divisions for Guatemala (Figure 3), 6 for Belize (Figure 4), 17 for Honduras (Figure 5), 14 for El Salvador (Figure 6), 17 for Nicaragua (Figure 7), 7 for mainland Costa Rica (Figure 8), and 14 for Panama (Figure 9) but no further division for Cocos Island (abbreviated in the reports as Cocos I.; see also Table 4).

Distribution outside Central America is briefly summarized by reporting the level 2 units of Brummitt (2001; Figure 15) for which the ELPT database currently has registered reports. Questionable occurrences are marked with a question mark (?).

TABLE 4. Major revisions of subfamilies, genera, and subgenera including Central American liverworts.

Taxon	Reference
Adelanthus	Grolle 1972c
Acrolejeunea	Gradstein 1975
Anthoceros and *Folioceros*	Hässel de Menéndez 1990
Bazzania	Fulford 1946, 1959, 1963
Blepharolejeunea	van Slageren and Kruijt 1985
Brachiolejeunea and *Frullanoides*	van Slageren 1985b
Bryopteris	Stotler and Crandall-Stotler 1974
Calypogeia	Bischler 1962a, 1962b, 1962c, 1962d
Ceratolejeunea	Dauphin 2003
Cheilolejeunea	Bastos 2017, Bastos and Gradstein 2020b
Clasmatocolea	Engel 1980
Cololejeunea	Tixier 1980, 1985, 1991; Pócs and Bernecker 2009, Pócs et al. 2014
Colura	Jovet-Ast 1953, 1954; key to species in Gradstein 2021
Cyclolejeunea	Bernecker-Lücking 1998b, Prado and Ilkiu-Borges 2021
Dendroceros	Peñaloza-Bojacá et al. 2019
Dicranolejeunea and *Acanthocoleus*	Kruijt 1988
Diplasiolejeunea	Reyes 1982, Schäfer-Verwimp 2004
Drepanolejeunea	Bischler 1967
Echinocholea	Ilkiu-Borges 2005
Frullania subg. *Chonanthelia*	Yuzawa 1991
Frullania subg. *Frullania*	Stotler 1969
Frullania subg. *Meteoriopsis*	Uribe and Gradstein 2003, Uribe 2008
Jamesoniella	Grolle 1971a
Lejeunea	Reiner-Drehwald 1999, 2000a, 2005a, 2005b, 2006, 2009, 2010a, 2010b, Reiner-Drehwald and Ilkiu-Borges 2007, Reiner-Drehwald et al. 2008, Reiner-Drehwald et al. 2013, Reiner-Drehwald et al. 2018, Bastos and Gradstein 2020a
Lejeunea subg. *Crossotolejeunea*	Reiner-Drehwald and Goda 2000
Lepidolejeunea and *Luteolejeunea*	Piippo 1986
Leptolejeunea	Bischler 1969, Shu et al. 2022
Leptoscyphus	Grolle 1962a
Marchantiopsida	Bischler-Causse et al. 2005
Metzgeriaceae	Kuwahara 1986, Costa 2008
Neesioscyphus	Grolle 1964a, 1966a
Nowellia	Grolle 1968c, Robinson 1970
Odontolejeunea	Teeuwen 1989, Gradstein 1994
Odontoschisma	Gradstein and Ilkiu-Borges 2015
Phaeoceros	Hässel de Menéndez 1989
Phaeomegaceros	Ibarra-Morales et al. 2020; Peñaloza-Bojacá et al. 2022
Plagiochila	Heinrichs 2002, Gradstein 2015a, 2015b, 2016, 2017
Porella	Swails 1970, So 2005
Prionolejeunea	Ilkiu-Borges 2006, 2016
Ptychantheae, Brachiolejeuneae	Gradstein 1994
Pycnolejeunea	He 1999; Bastos et al. 2020
Radula	Yamada 1981b, 1982, 1987, 1988a, 1991, Oliveira de Silva et al. 2021
Rectolejeunea	Reiner-Drehwald and Grolle 2012
Riccardia	Meenks 1987, Gradstein and Reeb 2018
Riccia	Jovet-Ast 1981, 1991, 1993
Syzygiella	Inoue 1966, Grolle 1971, Váňa et al. 2014b
Tylimanthus	Burghardt and Gradstein 2008

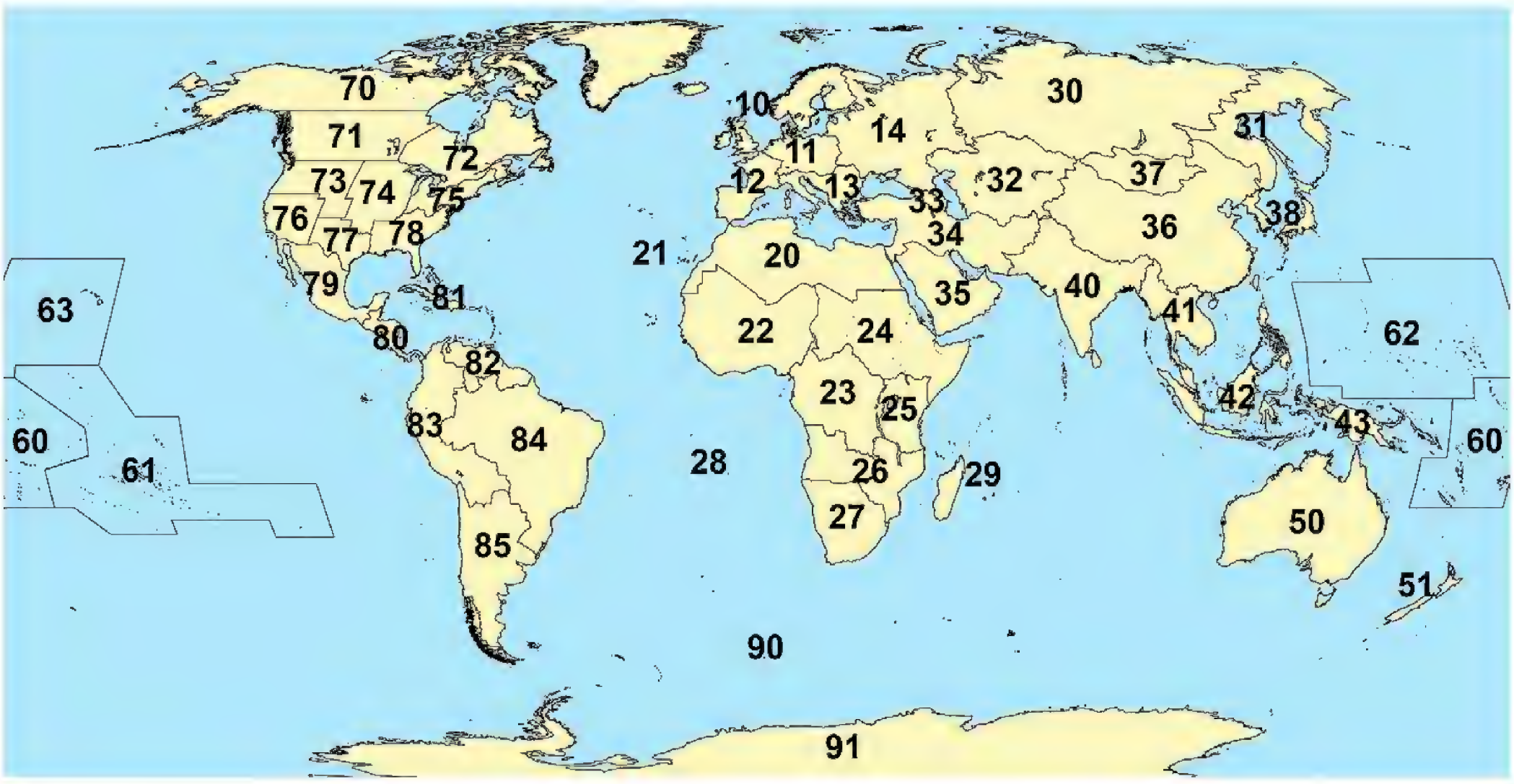

FIGURE 15. Subcontinental areas for which distribution outside Central America has been reported for Central American liverworts and hornworts. Numbers indicate level 2 units from Brummitt (2001). (10) Northern Europe. (11) Middle Europe. (12) Southwestern Europe. (13) Southeastern Europe. (14) Eastern Europe. (20) North Africa. (21) Macaronesia. (22) West Tropical Africa. (23) West Central Tropical Africa. (24) Northeast Tropical Africa. (25) East Tropical Africa. (26) South Tropical Africa. (27) Southern Africa. (28) Mid Atlantic Islands. (29) Western Indian Ocean. (30) Siberia. (31) Russian Far East. (32) Middle Asia. (33) Caucasus. (34) Western Asia. (35) Arabian Peninsula. (36) China. (37) Mongolia. (38) Eastern Asia. (40) Indian Subcontinent. (41) Indo-China. (42) Malesia. (43) Papuasia. (50) Australia. (51) New Zealand. (60) Southwestern Pacific. (61) Southeastern Pacific. (62) Northwestern Pacific. (63) Northeastern Pacific. (70) Subarctic North America. (71) Western Canada. (72) Eastern Canada. (73) Northwestern USA. (74) North-Central USA. (75) Northeastern USA. (76) Southwestern USA. (77) South-Central USA. (78) Southeastern USA. (79) Mexico. (80) Central America. (81) The Caribbean. (82) Northern South America. (83) Western South America. (84) Brazil. (85) Southern South America. (90) Subantarctic Islands. (91) Antarctic Continent.

Structure of the List

Reports of hornworts and liverworts from Central America are here separated into four groups. The first group consists of taxa that we currently accept as occurring in Central America. The second group includes taxa that occur in Central America but are either invalidly published or not accepted but cannot be placed with confidence under any accepted taxon. The third group includes taxa that we question as correctly reported from Central America. Most of them are mentioned without any reference to a specimen or mentioned with some indication of only being preliminarily identified. The last group includes taxa for which we reject occurrence in Central America either because the report was based on proven misidentifications or the concepts of the taxa when reported were different from the current concepts to which we subscribe, or the known worldwide distribution of a particular taxon makes a report from Central America highly unlikely, if not impossible. Apparent mistakes are also included in this group.

Denotations

The checklist presented here makes a critical distinction between reports from the literature where authors have cited specimens (firsthand reports) and reports only citing earlier reports (secondhand reports).

References citing primary reports (specimens or material seen by the cited author[s]) are given in bold. Secondary references not citing any material are given in plain type. In cases where we are not aware of any primary source or the earliest report is a secondary source without any clear connection to a primary source published later, we comment on the situation.

In the list below, a double asterisk (**) denotes taxa here reported for the first time from Central America (16 taxa). A single

asterisk (*) in front of a country or province name denotes that it is a new report for that area. A question mark (?) in front of a country or province name denotes that we are not aware of any confidently reported specimen. A dagger (†) in front of a country or province name denotes that we reject the report (Table 3). Records with ? or † are followed by a note explaining our view.

When we have found a specimen in a virtual herbarium, we give the URL for that specimen. Except for type specimens from Central America and new records, we have not searched intensively for URLs.

For specimens found in virtual herbaria, the herbarium number cited is the barcode number or, in the case of MO, the accession number. In all other cases, numbers used in the published reports are cited without knowing what status they have in herbaria today.

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Alphabetical List of Taxa

ACCEPTED TAXA

ANTHOCEROTOPHYTA

Anthoceros L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753).

Anthoceros lamellatus Steph., *Sp. Hepat. (Stephani)* 5: 1000, 1916 (Stephani 1916a). Type: Brazil.

?**COSTA RICA.** S. loc. (Ellis et al. 2015b; Ibarra-Morales et al. 2015). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. S. loc. (Ellis et al. 2015b; Ibarra-Morales et al. 2015; Gradstein 2021). CHIRIQUÍ: S. loc., *Villarreal 1307* (M, **Bainard and Villarreal 2013**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Frente a Quebrada Bonita, Poste B-623, *Villarreal 646* (PMA, **Dauphin et al. 2006**).

Also reported from Southeastern USA, Mexico, the Caribbean(?), Northern South America, Western South America, Brazil, Southern South America.

Anthoceros tuberculatus Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 25, 1832 (Lehmann 1832). Type: St. Vincent.

=*Anthoceros vegetans* M.Howe, *Proc. Calif. Acad. Sci.*, ser. 4, 21(17): 205, 1934 (Howe 1934), syn. fide Hässel (1990). Holotype: Cocos Island, in ripis humidis in loco "Wafer Bay, Cocos Island," dicto specimen unicum (n. 234), 28 Jun 1932, *John Thomas Howell* (CAS-214873 https://www.gbif.org/occurrence/1426338165).

?**COSTA RICA.** S. loc. (Cole 1984 as *Anthoceros vegetans*). Note: We are not aware of any firsthand report from mainland Costa Rica.

PANAMA. S. loc., *Villarreal & Rodríguez 857* (CONN, **Villarreal et al. 2015, 2017**; **Cargill et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**). NGÄBE-BUGLÉ COMARCA: Jirondai distrito, División entre Chiriquí y Bocas del Toro, Letrero de Palo Seco, *Villarreal 644* (PMA, **Dauphin et al. 2006**); Jirondai distrito, División entre Chiriquí y Bocas del Toro, Letrero de Palo Seco, *Villarreal 648a* (PMA, **Dauphin et al. 2006**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, 8°40′N, 79°55′W, 800–900 m, *Salazar Allen 20970* (PMA, **Dauphin et al. 2006**).

COCOS I. S. loc. (Clark 1953a as *Anthoceros vegetans*; Fosberg and Klawe 1966 as *Anthoceros vegetans*; Dauphin 1995); Cascada W de Bahía Wafer, 5°32′57″N, 87°03′56″W, 20 m, 6 Feb 1990, *Dauphin 1122*, det. G.-Dauphin Jan 2021 (USJ-47177, CR-4468153!, W!, **this publication**); Cascada W de Bahía Wafer, 5°32′57″N, 87°03′56″W, 0–20 m, 15 Feb 1994, *Dauphin 1122* (USJ, **Dauphin 1995, 1999, 2005**); Wafer Bay, *Howell CAS 215007* (**Dauphin 2005**); Wafer Bay, 28 Jun 1932, *Howell* (**Hässel 1990** as *Anthoceros vegetans*; **Dauphin 2005**); Wafer Bay, 28 Jun 1932, *Howell 234*, det. M.A.Howe (CAS-214873 https://www.gbif.org/occurrence/1426338165, **TYPE** of *Anthoceros vegetans*, **Howe 1934** as *Anthoceros vegetans*; **Proskauer 1951a** as *Anthoceros vegetans*; **Bonner 1962a** as *Anthoceros vegetans*; **Weber 1993** as *Anthoceros vegetans*).

Also reported from the Caribbean, Western South America, Brazil.

Dendroceros Nees, *Syn. Hepat.* 4: 579, 1846 (Gottsche et al. 1846).

Dendroceros crispatus (Hook.) Nees, *Syn. Hepat.* 4: 579, 1846 (Gottsche et al. 1846) var. ***crispatus***.

≡*Monoclea crispata* Hook., *Bot. Misc.* 1: 117, 1830 (Hooker 1830). Type: St. Vincent.

?BELIZE. S. loc. (Amélio et al. 2021). Note: We are not aware of any firsthand report from Belize.

COSTA RICA. S. loc. (Garcia et al. 2012; Amélio et al. 2021). PUNTARENAS: Coto Brus cantón, Limoncito, *Dauphin 2043* (CR, **Dauphin 2005**); Monteverde, 14 Jun 1966, *James, M. 3*, det. Proskauer (R, **Reed and Robinson 1971** as '*cristatus*'; **Dauphin 2005** as '*cristatus*'). SAN JOSÉ: Dota cantón, San Marcos, 9°40′N, 84°00′W, 1,000–1,700 m, *Gómez-Pignataro 19354* (MO, **Dauphin 2005**); S. loc., 1947, *Svihla 47-725* (NY-1319054, **Peñaloza-Bojacá et al. 2019**).

PANAMA. S. loc. (Peñaloza-Bojacá et al. 2019; Amélio et al. 2021). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Frente a Quebrada Bonita km 59, Poste B-623, *Villarreal & Aráuz 720* (PMA, **Dauphin et al. 2006**); S. loc. (Garcia et al. 2012); S. loc., *Villarreal 7981* (PMA, **Garcia et al. 2012**). NGÄBE-BUGLÉ COMARCA: Jirondai distrito, División entre Chiriquí y Bocas del Toro, Letrero de Palo Seco, *Villarreal et al. 719a* (PMA, **Dauphin et al. 2006**).

Also reported from West-Central Tropical Africa, Indo-China(?), Australia, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, Mexico, the Caribbean, Western South America, Brazil.

Dendroceros crispus (Sw.) Nees, *Syn. Hepat.* 4: 581, 1846 (Gottsche et al. 1846).

≡*Anthoceros crispus* Sw., *Prodr. (Swartz)*: 146, 1788 (Swartz 1788). Type: Jamaica.

COSTA RICA. S. loc. (Cole 1984; Schäfer-Verwimp and Pócs 2009; Peñaloza-Bojacá et al. 2019; Amélio et al. 2021). CARTAGO: El Guarco cantón, 3 de Junio, *Schäfer-Verwimp 447*, det. Schäfer-Verwimp (CR, **Dauphin 2005**); Paraíso cantón, Orosi, Tapantí National Park, *Schäfer-Verwimp & Holz SV/H-0357* (**Dauphin 2005**). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m (Dauphin 2005); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley & Valerio 49166a* (**Herzog 1951**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc. (Peñaloza-Bojacá et al. 2019; Amélio et al. 2021); S. loc., *Villarreal 1296* (M, **Villarreal et al. 2015**; **Peñaloza-Bojacá et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); S. loc., *Villarreal 742* (PMA, Villarreal et al. 2010a, 2010b; **Li et al. 2011**; **Garcia et al. 2012**); S. loc., *Villarreal et al. 1296* (M, **Bainard and Villarreal 2013**; **Cargill et al. 2022**). PANAMA WEST: Capira distrito, Altos de Campana National Park, *Salazar Allen et al. 9435* (PMA, **Stotler et al. 1998**).

Also reported from Malesia, Papuasia, Southwestern Pacific(?), Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Leiosporoceros Hässel, *J. Bryol.* 14(2): 255, 1986 (Hässel 1986).

Leiosporoceros dussii (Steph.) Hässel, *J. Bryol.* 14(2): 255, 1986 (Hässel 1986).

≡*Anthoceros dussii* Steph., *Hedwigia* 32(3): 142, 1893 (Stephani 1893d). Type: Martinique.

COSTA RICA. S. loc. (Salazar Allen et al. 2017; Gradstein 2021). CARTAGO: Turrialba cantón, Volcán Turrialba, 2006, *Villarreal et al. CR-2006-JC882* (**Bouchard et al. 2020**); Turrialba National Park, Volcano top, 3,000 m, *Villarreal et al. 885A* (CONN!, **this publication**).

PANAMA. S. loc. (**Salazar Allen 2018**; Gradstein 2021); S. loc., *Villarreal & Araúz 8511285* (PMA, **Villarreal et al. 2015**). CHIRIQUÍ: S. loc., *Villarreal et al. 1312* (M, **Bainard and Villarreal 2013**). COCLÉ: S. loc. (**Rahmatpour et al. 2021**); S. loc., *Villarreal et al. 1285* (M, **Bainard and Villarreal 2013**); S. loc., 2017, *Villarreal PA-17-1771*, *PA-17-1772* (PMA, **Bouchard et al. 2020**); Antón distrito, El Valle de Antón, Camino hacia Río Indio, *Villarreal & Araúz 651* (PMA, **Duff et al. 2004, 2007**; **Dauphin et al. 2006**; **Villarreal et al. 2010a, 2010b**; **Li et al. 2011**); Antón distrito, El Valle de Antón, carretera hacia la Mesa, 828 m, *Salazar Allen et al. 20932* (PMA, **Salazar Allen et al. 2017**); Antón distrito, El Valle de Antón, det. J.-Gudiño (PMA, **Garrido et al. 2019**); Antón distrito, El Valle de Antón, Monumento Natural Cerro Gaital, en laderas del Río El Guayabo, 580 m, *Salazar Allen et al. 20940*, *20942*, *etc.* (PMA, **Salazar Allen et al.**

2017); Antón distrito, El Valle de Antón, Río El Guayabo, 2006, *Villarreal & Rodríguez PA-2006-854A* (PMA, **Bouchard et al. 2020**); Antón distrito, El Valle de Antón, Río El Guayabo, 2017, *Villarreal PA-17-1659*, *PA-17-1660*, *etc.* (PMA, **Bouchard et al. 2020**); Antón distrito, El Valle de Antón, Río Indio, 2017, *Villarreal PA-17-1643*, *PA-17-1644*, *etc.* (PMA, **Bouchard et al. 2020**); Antón distrito, El Valle de Antón, Río Guayabo, dentro del Monumento Natural Cerro Gaital, 8°37′34.6″N, 80°08′13.7″W, 624 m, *Guadelupe 240*, *241* (PMA, **Guadalupe et al. 2021**); Antón distrito, Río Indio, dentro del Monumento Natural Cerro Gaital, 8°38′25.5″N, 80°06′49.2″W, *Guadalupe 247*, *248* (PMA, **Guadalupe et al. 2021**). NGÄBE-BUGLÉ COMARCA: Jirondai distrito, Palo Seco, 2017, *Villarreal PA-17-1765* (PMA, **Bouchard et al. 2020**).

Also reported from Mexico, the Caribbean, Western South America.

Nothoceros (R.M.Schust.) J. Haseg., *J. Hattori Bot. Lab.* 76: 32, 1994 (Hasegawa 1994).

Nothoceros aenigmaticus J.C.Villarreal et K.D.McFarland, *Bryologist* 113(1): 109, 2010 (Villarreal et al. 2010a). Type: USA.

COSTA RICA. S. loc., 3,000 m, *Villarreal et al. 884* (CR, **Villarreal and Renner 2014**); S. loc., 3,500 m, *Villarreal et al. 902* (CR, **Villarreal and Renner 2014**). CARTAGO: Turrialba cantón, Turrialba Volcán, top, 3,000 m, *Villarreal et al. 885(b?)* (CR, CONN, **Villarreal et al. 2012b** as *Nothoceros* cf. *aenigmaticus*; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**). SAN JOSÉ: Pérez Zeledón cantón, Cerro de la Muerte, Páramo Buena Vista, 3,000 m, *Villarreal et al. 892* (CR, CONN, **Villarreal et al. 2012b** as *Nothoceros* cf. *aenigmaticus*; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**).

Also reported from Southeastern USA, Mexico, Northern South America, Western South America.

Nothoceros canaliculatus (Pagán) J.C.Villarreal, Hässel et N.Salazar Allen, *Bryologist* 110(2): 283, 2007 (Villarreal et al. 2007).

≡*Dendroceros canaliculatus* Pagán, *Bryologist* 45(4): 111, 1942 (Pagán 1942a). Type: Puerto Rico.

≡*Megaceros canaliculatus* (Pagán) A.J.Shaw et Renzaglia ex J.C.Villarreal et N.Salazar Allen, *Trop. Bryol.* 27: 82, 2006 (Dauphin et al. 2006).

Note: All reports of *Nothoceros canaliculatus* except one from Costa Rica belong to *Nothoceros schizophyllus* (J.C.Villarreal).

COSTA RICA. S. loc., *Lépiz* (**Alonso-García et al. 2020**). CARTAGO: Paraíso cantón, Tapantí National Park, ~1,500 m, *Lépiz* (CONN, M, **Villarreal et al. 2012b, 2015**; **Villarreal and Renner 2014**).

Also reported from the Caribbean.

Nothoceros schizophyllus (Gottsche ex Steph.) J.C.Villarreal, *Molec. Phylogen. Evol.* 78: 34, 2014 (Villarreal and Renner 2014).

≡*Megaceros schizophyllus* Gottsche ex Steph., *Sp. Hepat. (Stephani)* 5: 949, 1916 (Stephani 1916a). Type: Cuba.

COSTA RICA. SAN JOSÉ: Peréz Zeledón, Rivas, Camino al Río Rivas, 700 m, 17 Jun 2006, *Villarreal et al. 895* (CONN, CR, **Villarreal et al. 2012b** as *Nothoceros canaliculatus*; **Villarreal and Renner 2014**; **Alonso-García et al. 2020** as *Nothoceros canaliculatus*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**). PANAMA WEST: Panamá distrito, Camino a Cerro Pelado, 8°38′53″N, 80°04′42″W, *Villarreal & Varela 584* (ABSH, CANB, PMA, Duff et al. 2004 as *Dendroceros* aff. *canaliculatus*; **Dauphin et al. 2006** as *Megaceros canaliculatus*; **Villarreal et al. 2010a, 2010b, 2012b**, all as *Nothoceros canaliculatus*, **2015**; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**).

Also reported from the Caribbean.

Nothoceros superbus J.C.Villarreal, Hässel et N.Salazar Allen, *Bryologist* 110(2): 280, 2007 (Villarreal et al. 2007). Holotype: Costa Rica: Cartago, P. N. Tapanti, 1,615 m, *Salazar Allen, Carranza, & Villarreal 20676* (USJ, isotypes CR-4023727, PMA).

COSTA RICA. S. loc. (von Konrat et al. 2010). CARTAGO: Paraíso cantón, Tapanti National Park, 1,615 m, *Salazar Allen et al. 20662*, *20676*, *etc.* (USJ, CR, PMA, **TYPE, Villarreal et al. 2007, 2012b, 2015**; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**).

Not found outside Central America.

Nothoceros vincentianus (Lehm. et Lindenb.) J.C.Villarreal, *Bryologist* 113(1): 111, 2010 (Villarreal et al. 2007).

≡*Anthoceros vincentianus* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 16, 1834 (Lehmann 1834). Type: St. Vincent.

≡*Megaceros vincentianus* (Lehm. et Lindenb.) Campb., *Ann. Bot. (Oxford)* 21(4): 474, 1907 (Campbell 1907).

=*Anthoceros cristosporus* Steph., *Primit. fl. costar.*: 111, 1893 (Stephani 1893c), syn. fide Villarreal and Renner (2014). Lectotype (Bonner 1962a: 179) or possibly holotype: Costa Rica, San José, Forêts de la Palma, 1,550 m, 1888, *Pittier 6* (G-00060912 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115851&lang=en).

≡*Megaceros cristosporus* (Steph.) Steph., *Sp. Hepat. (Stephani)* 5: 948, 1916 (Stephani 1916a).

=*Megaceros guatemalensis* Steph., *Sp. Hepat. (Stephani)* 5: 948, 1916 (Stephani 1916a), syn. fide Villarreal and Renner (2014). Lectotype (Söderström et al. 2023a: 152): Guatemala, Cobán, Alta Verapaz, 1,650 m, Türckheim, Jun. 1908, *hb. Levier 6078* (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, isolectotypes NY-00231432, NY-00231433).

GUATEMALA. S. loc. (Khanna 1944 as *Megaceros guatemalensis*). ALTA VERAPAZ: Cobán (**Stephani 1916a** as *Megaceros guatemalensis*); Cobán, 1,650 m, Jun 1908, *Türckheim* (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, NY, **TYPE** of *Megaceros guatemalensis*, **Geissler and Bischler 1985** as *Megaceros guatemalensis*).

IZABAL: Morales municipio, Sierra Caral, Finca La Firmeza, Río Olay, 15.41056°N, 88.68456°W, 366 m, 2011, *Perez 4345* (M, **Villarreal and Renner 2014**).

COSTA RICA. S. loc. (**Stephani 1916a** as *Megaceros* '*cristisporus*'; Khanna 1944 as *Megaceros* '*cristisporus*'; Gradstein 2021); S. loc., ~700 m, *Villarreal et al. 896* (CR, **Villarreal and Renner 2014**); S. loc., ~2,500 m, *Villarreal et al. 904* (CR, **Villarreal and Renner 2014**); Cordillera de Talamanca (Holz 2003 as *Megaceros vincentianus*; **Holz and Gradstein 2005b** as *Megaceros vincentianus*). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, 7 May 2007, *Norris 109969* (UC-2053215, **Norris et al. 2017** as *Megaceros vincentianus*). HEREDIA: Barva cantón, Barva forest, *Pittier 6042* (**Stephani 1893c** as *Anthoceros cristosporus*); Barva cantón, Barva Volcano, 5,000 ft (1,524 m), *Pittier* (**Haupt 1942** as *Megaceros cristosporus*); Heredia cantón, Vara Blanca, 5,300 ft (1,615 m), 2 Aug 1940, *Haupt* (**Haupt 1942** as *Megaceros cristosporus*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008** as *Megaceros vincentianus*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Megaceros vincentianus*). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942** as *Megaceros cristosporus*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Megaceros vincentianus*); Dota cantón, San Gerardo (Dauphin 2005 as *Megaceros vincentianus*); Moravia cantón, La Palma, *Pittier* (**Haupt 1942** as *Megaceros cristosporus*); Moravia cantón, La Palma, 1,550 m, 18 Dec 1888, *Pittier 6* (G-00060912 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115851&lang=en, **TYPE** of *Anthoceros cristosporus*, **Stephani 1893c** as *Anthoceros cristosporus*; **Bonner 1962a** as *Anthoceros cristosporus*).

PANAMA. S. loc. (Gradstein 2021); S. loc., ~800–900 m, *Villarreal & Rodríguez 840* (CONN, **Villarreal and Renner 2014**; **Villarreal et al. 2015**); S. loc., *Villarreal et al. 641* (ABSH, **Villarreal et al. 2015**); CHIRIQUÍ: S. loc., *Villarreal et al. 1299*, *1310* (M, **Bainard and Villarreal 2013**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34596* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3495* (ABSH, **Stotler et al. 1998** as *Megaceros vincentianus*), Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, ~800 m, *Villarreal & Rodríguez 802* (CONN, **Villarreal et al. 2012b**; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°6.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34242* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, *Villarreal 641* (Duff et al. 2004 as *Megaceros* aff. *vincentianus*); La Pintada distrito, El Copé, *Villarreal 669* (PMA, **Villarreal et al. 2010a**, **2010b**; **Li et al. 2011**). VERAGUAS: S. loc., *Villarreal 1280* (M, **Bainard and Villarreal 2013**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30854* (JE, **Schäfer-Verwimp 2014**); Santa Fe, *Villarreal & Rodríguez 1280A–1280F*, *1281A–1281D*, *1282A–1282F* (**Villarreal et al. 2012a**); Santa Fe, ~800–900 m, *Villarreal & Rodríguez 841* (CONN, **Villarreal et al. 2012b**; **Villarreal and Renner 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

***Notothylas* Sull., *Amer. J. Sci. Arts*, ser. 2, 1(1): 74, 1846 (Gray 1846).**

Notothylas breutelii (Gottsche) Gottsche, *Bot. Zeitung (Berlin) Beil.* 16: 21, 1857 (Gottsche 1858).

≡*Anthoceros breutelii* Gottsche, *Syn. Hepat.* 4: 583, 1846 (Gottsche et al. 1846). Type: St. Vincent.

COSTA RICA. Pan-American Highway, *Schuster* (**Schuster 1992c**).

Also reported from Malesia, Northeastern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Notothylas dissecta Steph., *Sp. Hepat. (Stephani)* 5: 1020, 1917 (Stephani 1917a). Lectotype (Asthana and Srivastava 1991): Guatemala, Suchitepéquez, Mazatenango, *Bernoulli 433* (G-00113205 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=149479&lang=en, synlectotype [*Bernoulli 482*] G-00112969 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=141857&lang=en).

GUATEMALA. S. loc. (**Stephani 1917a**; Hässel 1976; Udar and Singh 1979; Hasegawa 1984; **Geissler and Bischler 1989**; Schuster 1992c; Parihar et al. 1994; Singh and Semwal 2000; Gradstein et al. 2001b; Chaudhary et al. 2006). SUCHITEPÉQUEZ: Mazatenango, *Bernoulli 433* (G-00113205 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=149479&lang=en, **TYPE**, **Asthana and Srivastava 1991**; **Singh 2002**; **Amélio 2018**).

COSTA RICA. HEREDIA: Santo Domingo cantón, Santa Rosa, Instituto Nacional de Biodiversidad, 8 Oct 2003, *Dauphin & Li-Aragón* (CR, **Dauphin 2005**).

PANAMA. S. loc., *Araúz et al. 798* (M, PMA, **Villarreal et al. 2015**, **2017**). VERAGUAS: Soná distrito, Isla Canales de Tierra, Playa los Combos, Jan 2002, *Salazar Allen et al. 20222* (PMA, **Salazar Allen and Chung 2003**, **2006**; **Dauphin et al. 2006**).

Also reported from Indian Subcontinent, Indo-China.

Notothylas javanica (Sande Lac.) Gottsche, *Bot. Zeitung (Berlin) Beil.* 16: 20, 1858 (Gottsche 1858).

≡*Blasia javanica* Sande Lac., *Syn. hepat. jav.*: 94, 1856 (Sande Lacoste 1856). Type: Java.

Note: *Notothylas javanica* is a mainly SE Asiatic taxon also reported from Africa, South America, and Mexico. It may have been introduced by humans (cf. Hasegawa and Tan 1996).

PANAMA. S. loc. (Ruklani et al. 2016; Amélio 2018; Escolástico-Ortiz and Juárez-Martínez 2018); S. loc., *Villarreal 1311* (M, **Villarreal et al. 2015**). CHIRIQUÍ: S. loc. (Peng and Zhu 2014). VERAGUAS: Santa Fe distrito, Santiago, Bda. Las Delicias, casa Familia Aguilar, *Villarreal 806* (ABSH, PMA, Dauphin et al. 2006 as *Notothylas* cf. *javanica*; **Villarreal et al. 2015**).

Also reported from West Tropical Africa, West-Central Tropical Africa, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, Mexico, Western South America, Brazil.

Notothylas orbicularis (Schwein.) Sull., in A.Gray, *Amer. J. Sci. Arts*, ser. 2, 1(1): 75, 1846 (Gray 1846).

≡*Targionia orbicularis* Schwein., *Spec. Fl. Amer. Crypt.*: 23, 1821 (Schweinitz 1821). Type: USA.

PANAMA. CHIRIQUÍ: S. loc., *Villarreal et al. 1291* (M, **Bainard and Villarreal 2013**); Tierras Altas distrito, Volcán, Las Lagunas de Volcán, 5 Jul 2011, *Villarreal et al. 1302* (M, **Villarreal et al. 2015**).

Also reported from Middle Europe, Southeastern Europe, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Australia, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico(?), the Caribbean, Western South America, Brazil.

***Phaeoceros* Prosk., *Bull. Torrey Bot. Club* 78(4): 346, 1951 (Proskauer 1951a).**

Phaeoceros carolinianus (Michx.) Prosk. *Bull. Torrey Bot. Club* 78(4): 346, 1951 (Proskauer 1951a).

≡*Anthoceros carolinianus* Michx., *Fl. bor.-amer. (Michaux)* 2: 280, 1803 (Michaux 1803). Type: USA.

≡*Phaeoceros laevis* var. *carolinianus* (Michx.) Augier, *Fl. Bryoph.*: 187, 1966 (Augier 1966), nom. inval. (International Code of Nomenclature for algae, fungi and plants 2018 [hereafter ICN2018], Article (Art.) 41.5 [Turland et al. 2018]; basionym not cited).

=*Anthoceros donnellii* Austin, *Bull. Torrey Bot. Club* 6(52): 304, 1879 (Austin 1879), syn. fide Hässel (1989). Type: USA.

?GUATEMALA. S. loc. (Dauphin 2005 as *Phaeoceros laevis* var. *carolinianus*). Note: We are not aware of any firsthand report from Guatemala.

***BELIZE.** *TOLEDO: Bladen Nature Reserve, 16°30′00″N, 88°54′00″W, ~250 m, 15 May 1996, *Whittemore & Davidse 5705*, det. A.-Whittemore 1996 (MO! http://tropicos.org/specimen/90209711, **this publication**).

***HONDURAS.** *COPÁN: Copán municipio, Copán Ruinas, 14°52′N, 89°10′W, 680 m, 29 Apr 1996, *Allen 17714*, det. A.-Whittemore 1996 (MO-4428667! http://tropicos.org/specimen/90039825, **this publication**).

***NICARAGUA.** *MANAGUA: Ticuantepe municipio, Las Nubes, 12°00′N, 86°16′W, 800 m, 18 Oct 1980, *Guzmán et al. 1361*, det. A.-Whittemore 1996 (MO-4424141! http://tropicos.org/specimen/90042991, **this publication**).

COSTA RICA. CARTAGO: Oreamuno cantón, Irazú Volcán National Park, Cerro Largo, N-(Innen)-Hang der Caldera, 3,250 m, 6 Apr 1971, *Kuhbier 802*, det. G.Dauphin (B-225784, **Dauphin 2005** as *Phaeoceros laevis* var. *carolinianus*). SAN JOSÉ: Moravia cantón, Chemin de Carillo, versant Atlantique, 300 m, *Pittier 6068* (**Stephani 1893c** as *Anthoceros donnellii*).

PANAMA. CHIRIQUÍ: S. loc., *Villarreal et al. 1292* (M, **Bainard and Villarreal 2013**). COCLÉ: Antón distrito, El Valle de Antón, *Villarreal & Varela 520* (CANB, PMA, **Duff et al. 2004**; **Dauphin et al. 2006**; **Villarreal et al. 2010a, 2010b**; Li et al. 2011 as *Phaeoceros* cf. *carolinianus*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Russian Far East, Caucasus, Western Asia, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Phaeoceros dendroceroides (Steph.) Hässel, *Beih. Nova Hedwigia* 134: 487, 209, 2009 (Hässel and Rubies 2009).

≡*Anthoceros dendroceroides* Steph., *Sp. Hepat. (Stephani)* 5: 984, 1916 (Stephani 1916a). Type: Chile.

PANAMA. S. loc., *Villarreal 1305* (M, **Villarreal et al. 2015**). CHIRIQUÍ: S. loc., *Villarreal et al. 1307b* (M, **Bainard and Villarreal 2013**).

Also reported from Northern South America(?), Southern South America, Subantarctic Islands(?).

Phaeoceros flexivalvis (Gottsche et Nees) Hässel, *Candollea* 44(2): 728, 1989 (Hässel 1989).

≡*Anthoceros flexivalvis* Gottsche et Nees, *Syn. Hepat.* 4: 586, 1846 (Gottsche et al. 1846). Type: St. Kitts.

COSTA RICA. ALAJUELA: San Ramón cantón, Montes de Aguacate, 1,500 ft (457 m), *Oersted* (**Müller 1851** as *Anthoceros flexivalvis*).

Also reported from Mexico, the Caribbean.

Phaeoceros microsporus (Steph.) Hässel, *Candollea* 44(2): 721, 1989 (Hässel 1989).

≡*Aspiromitus microsporus* Steph., *Sp. Hepat. (Stephani)* 5: 963, 1916 (Stephani 1916a). Lectotype (Bonner 1962a: 288; see also Hässel 1989: 721): Guatemala, Copan, *Bernoulli ex hb. Gottsche* (G).

GUATEMALA. S. loc. (**Stephani 1916a** as *Aspiromitus microsporus*; Schuster 1992c; Freire et al. 2012). ALTA VERAPAZ: Cobán, *Bernoulli* (G, **TYPE, Bonner 1962a**; **Hässel 1989**; **Freire 2006**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, *Villarreal & Araúz 725* (M, **Villarreal et al. 2015**).

Also reported from Southern South America.

Phaeomegaceros R.J.Duff, J.C.Villarreal, Cargill et Renzaglia, *Bryologist* 110(2): 241, 2007 (Duff et al. 2007).

Phaeomegaceros fimbriatus (Gottsche) R.J.Duff, J.C.Villarreal, Cargill et Renzaglia, *Bryologist* 110(2): 241, 2007 (Duff et al. 2007).

≡*Anthoceros fimbriatus* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 187, 1864 (Gottsche 1864). Type: Colombia.

≡*Phaeoceros fimbriatus* (Gottsche) Gradst., *J. Hattori Bot. Lab.* 45: 123, 1979 (Gradstein and Hekking 1979).

=*Aspiromitus pulcherrimus* Steph. *Sp. Hepat. (Stephani)* 5: 964, 1916 (Stephani 1916a), syn. Fide Hässel (1989). Lectotype (Bonner 1962a: 290; see also Hässel 1989: 75 as "holotype") if not holotype: Costa Rica, Carillo, sur le chemin de Carillo versant atlantique, 300 m, Nov 1890, *Biolley 3092* (G-00061321 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=130403&lang=en).

≡*Anthoceros pulcherrimus* (Steph.) Haupt, *Bryologist* 45(5): 145, 1942 (Haupt 1942).

COSTA RICA. S. loc. (**Stephani 1916a** as *Aspiromitus pulcherrimus*; Haupt 1942 as *Anthoceros pulcherrimus*; Schuster 1992c as *Anthoceros fimbriatus*; Hasegawa 2001 as *Phaeoceros fimbriatus*; Lavocat Bernard 2018; Ibarra-Morales et al. 2020); S. loc., *Villarreal & Barrantes* (**Villarreal and Renzaglia 2006a, 2006b**). ALAJUELA: Between Grecia and Naranjo, 3,700 ft (1,128 m), 11 Aug 1940, *Haupt* (**Haupt 1942** as *Anthoceros pulcherrimus*). CARTAGO: Turrialba cantón, Volcán Turrialba, 3,200 m, *Villarreal et al. 880* (CONN, **Villarreal et al. 2012b**; **Villarreal and Renner 2014**; **Alonso-García et al. 2020**); Volcán Irazú, area del crater 3,200 m, 11 Jul 2006, *Villarreal et al. 870*, *871*, *881* (CONN, M, **Villarreal et al. 2015**; **Peñaloza-Bojacá et al. 2022**). GUANACASTE: S. loc., *Villarreal & Barrantes* (**Duff et al. 2007**). LIMÓN: Pococí cantón, sur le chemin de Carrillo versant atlantique, 300 m, Sep 1890, *Biolley 3092* (G, **TYPE** of *Aspiromitus pulcherrimus*, **Bonner 1962a** as *Aspiromitus pulcherrimus*; **Hässel 1989** as *Phaeoceros fimbriatus*; **Dauphin 2005** as *Phaeoceros fimbriatus*). SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 6,000 ft (1,829 m), 31 Jul 1940, *Haupt* (**Haupt 1942** as *Anthoceros pulcherrimus*).

PANAMA. S. loc. (Lavocat Bernard 2018; Ibarra-Morales et al. 2020); S. loc., *Villarreal 624* (PMA, **Villarreal and Renzaglia 2006a, 2006b**); S. loc., *Villarreal 779* (ABSH, **Villarreal et al. 2015**; **Cargill et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna, *Villarreal & Araúz 634*, *717* (PMA, **Villarreal and Renzaglia 2006a, 2006b**); Gualaca distrito, Fortuna, *Villarreal 799* (**Duff et al. 2007**); Gualaca distrito, Hornito, Fortuna, 1,170 m, *Stotler & Crandall-Stotler 3476* (ABSH, PMA, **Stotler et al. 1998** as *Phaeoceros fimbriatus*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Southern South America(?).

MARCHANTIOPHYTA

Acanthocoleus R.M.Schust., *Bull. Torrey Bot. Club* 97(6): 339, 1970 (Schuster 1970).

Acanthocoleus aberrans (Lindenb. et Gottsche) Kruijt, *Bryophyt. Biblioth.* 36: 62, 1988 (Kruijt 1988) var. ***aberrans***.

≡*Lejeunea aberrans* Lindenb. et Gottsche, *Syn. Hepat.* 5: 751, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Dicranolejeunea pulchella* Herzog, *Rev. Bryol. Lichénol.* 20: 139, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 191 as "holotype"): Costa Rica, San José, vicinity of Santa María de Dota. On exposed rock, 1,500–1,800 m, 26 Dec 1925–3 Jan 1926, *Standley & Valerio 43153* (JE-04001075 https://je.jacq.org/JE04001075, isolectotype US-00070854

GUATEMALA. S. loc. (Schäfer-Verwimp 1999; Zhu and Grolle 2001). ALTA VERAPAZ: Senahú municipio, Finca Mocca, 1920, *Johnson 170s* (US, **Gradstein 1994**; **Freire 2006**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 122* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: S. loc., *Pérez 1206* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (**Gradstein 1994**; Schäfer-Verwimp 1999; Zhu and Grolle 2001). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest (**Norris et al. 2017**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, 2,500 m, *Dauphin 3398* (CR, **Dauphin 2005**); Dota cantón, Santa María (Dauphin 2005); Dota cantón, Santa María, 1,500–1,800 m, *Standley & Valerio 43153* (B, JE-04001075 https://je.jacq.org/JE04001075, **TYPE** of *Dicranolejeunea pulchella*, **Herzog 1951** as *Dicranolejeunea pulchella*; **Bonner 1965** as *Dicranolejeunea pulchella*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Acanthocoleus aberrans var. ***laevis*** Gradst., *Fl. Neotrop. Monogr.* 62: 193, 1994 (Gradstein 1994). Type: Brazil.

***HONDURAS.** *COMAYAGUA: Meambar municipio, Quebrada Agua Helada, above San José de Los Planes, ~15 km

E of Lago Yojoa, Cerro Meambar, 14°047′N, 87°51′W, 9 Mar 1933, *Allen 13713*, det. Dauphin May 2017 (MO-4428499! http://tropicos.org/specimen/90040018, **this publication**). *COPÁN: Copán municipio, Copán Ruinas, Quebrada Sesesmil, ~4.3 km N of ruins road to Agua Caliente, 14°52′N, 89°10′W, 29 Apr 1996, *Allen 17675*, det. Dauphin May 2017 (MO-4428474! http://tropicos.org/specimen/90040065, **this publication**).

***NICARAGUA.** *MATAGALPA: Matagalpa municipio, Hamonia, Selva Negra, desde km 139 de la carretera a Jinotega, 1,220 m, 26 Jun 1986, *Granzow de la Cerda 2153*, det. Dauphin May 2017 (MO-3375716! http://tropicos.org/specimen/101411583, **this publication**).

COSTA RICA. S. loc. (Stephani 1914 as *Euosmolejeunea beyrichii*). CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 64732* (**Herzog 1951** as *Euosmolejeunea beyrichii*).

PANAMA. CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30926*, *30969* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350 m, *Schäfer-Verwimp & Verwimp 34343* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34684* (JE, **Schäfer-Verwimp 2014**).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Acrobolbus Nees, *Syn. Hepat.* 1: 5, 1844 (Gottsche et al. 1844).

Acrobolbus cuneifolius (Steph.) Briscoe, *Phytotaxa* 202(1): 59, 2015 (Briscoe et al. 2015).

≡*Tylimanthus cuneifolius* Steph., *Bull. Herb. Boissier*, sér. 2, 5(12): 1138 (=*Spec. Hepat. [Stephani]* 3: 10), 1905 (Stephani 1905b). Type: Venezuela.

COSTA RICA. CARTAGO: El Guarco cantón, 3 de Junio, *Gradstein 9687* (GOET, **Gradstein 2021**). SAN JOSÉ: Between El Cañón and Ojo de Agua, 2,800–3,000 m, *Schuster RMS 71-950* (**Gradstein 2021**).

Also reported from Northern South America, Western South America.

Acrobolbus laxus (Lehm. et Lindenb.) Briscoe, *Phytotaxa* 202(1): 60, 2015 (Briscoe et al. 2015).

≡*Plagiochila laxa* Lehm. et Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 68, 1840 (Lindenberg 1840). Type: Guadeloupe.

≡*Tylimanthus laxus* (Lehm. and Lindenb.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 502, 1885 (Spruce 1885).

=*Plagiochila approximata* Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 59, 1840 (Lindenberg 1840), syn. fide Burghardt and Gradstein (2008). Type: Guadeloupe.

≡*Tylimanthus approximatus* (Lindenb.) Besch., *J. Bot. (Morot)* 7: 191, 1893 (Bescherelle 1893a).

=*Tylimanthus jamaicensis* Steph., *Bull. Herb. Boissier*, sér. 2, 5(12): 137 [=*Sp. Hepat. (Stephani)* 3: 9], 1905 (Stephani 1905b), syn. fide Fulford (1987). Type: Jamaica.

=*Tylimanthus setaceociliatus* Steph., *Sp. Hepat. (Stephani)* 6: 251, 1922 (Stephani 1922), syn. fide Burghardt and Gradstein (2008). Type: Ecuador.

=*Marsupidium latifolium* R.M.Schust., *Phytologia* 39: 249, 1978 (Schuster 1978a), syn. fide Burghardt and Gradstein (2008). Type: Venezuela.

≡*Acrobolbus latifolius* Dimon, Váňa, Schäf.-Verw., Heinrichs et M.A.M.Renner, *Austral. Syst. Bot.* 31(3): 218, 2018 (Dimon et al. 2018), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

HONDURAS. LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Arcagual SW of Gracias, 2,480 m, *Allen 11500* (MO-3982137, **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*).

NICARAGUA. ESTELÍ: Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 1,550–1,600 m, 24 Nov 1979, *Stevens & Grijalva 16299*, det. Dauphin May 2017 (MO-6236047! https://tropicos.org/specimen/100366532, **this publication**). GRANADA: Granada municipio, Volcán Mombacho, 1,000–1,222 m, *Heinrichs & Moreno 192* (GOET, U, **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*).

COSTA RICA. S. loc. (Gradstein 1999a as *Tylimanthus setaceociliatus*); S. loc., *Kappelle 4622* (U, Kappelle 1996 as *Tylimanthus* cf. *approximatus*); Cordillera de Talamanca (Holz 2003 as *Tylimanthus laxus*; **Holz and Gradstein 2005b** as *Tylimanthus laxus*). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47810* (**Herzog 1938** as *Tylimanthus approximatus*; **Morales 1991** as *Tylimanthus approximatus*); Poás Volcano, 2,600–2,700 m, *Gradstein & Mues 9628* (GOET, **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Lucas* (UC-2053818, **Norris et al. 2017** as *Tylimanthus laxus*). CARTAGO: Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 9 Nov 1999, *Holz CR 99-613* (CR, GOET, JE, **Holz et al. 2001** as *Tylimanthus laxus*; **Dauphin 2005** as *Tylimanthus laxus*); El Guarco cantón, Páramo Buenavista, Reserva Tres de Junio, 3,250 m, 20 Jan 2000, *Holz CR 00-197* (CR, JE, GOET, MO-5282873, S-B62214, B, F, **Holz et al. 2001** as *Tylimanthus laxus*; **Dauphin 2005** as *Tylimanthus laxus*; **Groth and Heinrichs 2005** as *Tylimanthus laxus*; **Stech et al. 2006** as *Tylimanthus laxus*; **Hentschel et al. 2007c** as *Tylimanthus laxus*; **Burghardt 2007** as *Tylimanthus setaceociliatus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*; **Masuzaki et al. 2010** as *Tylimanthus laxus*; **Feldberg et al. 2014** as *Tylimanthus laxus*; **Briscoe et al. 2017** as *Tylimanthus laxus*; **Dimon et al. 2018**); El Guarco cantón, Reserva 3 de Junio, 2,650–2,800

m, *Gradstein & Mues 9686*, *9690* (GOET, **Burghardt 2007** as *Tylimanthus setaceociliatus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*); Paraíso cantón, Tapantí National Park, Orosi Valley, Sendero "La Oropéndola," 600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0341* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Tylimanthus laxus*). HEREDIA: Barva cantón, Volcán Barva, 2,650–2,900 m, *Gradstein & Mues 9648* (GOET, **Burghardt 2007** as *Tylimanthus setaceociliatus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*). PUNTARENAS: Monteverde, <1,500 m (Morales 1991 as *Tylimanthus jamaicensis*; Dauphin 2005 as *Tylimanthus laxus*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,550 m, *Gradstein 9487*, *9595*, *9605* (GOET, **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Plagiochila laxa* and *Tylimanthus laxus*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Tylimanthus approximatus*); Monteverde, 1,550 m, *Gradstein & Solano 9473*, *9512* (U, USJ, **Gradstein et al. 1994** as *Plagiochila laxa*; **Dauphin 2005** as *Plagiochila laxa*); Monteverde, 1,400 m, Feb 1969, *James, W. 1969-36* (US, **Reed and Robinson 1971** as *Tylimanthus jamaicensis*; **Dauphin 2005** as *Tylimanthus jamaicensis*); S. loc. (**Merwin et al. 2001** as *Plagiochila laxa*, *Tylimanthus laxus*, and *Tylimanthus* cf. *approximatus*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Tylimanthus laxus*); Dota cantón, Los Robles, *Schäfer-Verwimp & Holz* (**Dauphin 2005** as *Tylimanthus laxus*); Dota cantón, San Gerardo, "Los Robles," 2,420 m, 4 Jan 2000, *Schäfer-Verwimp & Holz* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Tylimanthus laxus*); Dota cantón, San Gerardo, Río Savegre, 2,000 m, 25 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1116* (CR, GOET, **Holz et al. 2001** as *Tylimanthus laxus*; **Dauphin 2005** as *Tylimanthus laxus*); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, Páramo Buena Vista, 13 Sep 1999, *Heinrichs et al. AHH-317* (CR, GOET, **Holz et al. 2001** as *Tylimanthus laxus*); Pérez Zeledón cantón, Pan-American Highway Sur, km 117, *Holz et al. AHH-317* (**Dauphin 2005** as *Tylimanthus laxus*); Pérez Zeledón cantón, Páramo Buena Vista, 3,400 m, *Dauphin 2920*, det. Briscoe (NY, **Davis 2004** as *Marsupidium latifolium*; **Dauphin 2005** as *Marsupidium latifolium*; **Forrest et al. 2006** as *Marsupidium latifolium*; **Hentschel et al. 2006a** as *Marsupidium latifolium*, **2007c** as *Marsupidium latifolium*; **Masuzaki et al. 2010** as *Marsupidium latifolium*; **Vilnet et al. 2011** as *Marsupidium latifolium*; **Cailliau et al. 2013** as *Marsupidium latifolium*; **Feldberg et al. 2014** as *Marsupidium latifolium*; **Shaw et al. 2015** as *Tylimanthus laxus*; **Dimon et al. 2018** as *Acrobolbus latifolius*); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38740* (B-13590, S-B80331, **Herzog 1938** as *Tylimanthus approximatus*; **Morales 1991** as *Tylimanthus approximatus*; **Dauphin 2005** as *Tylimanthus laxus*; **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30975* (JE, **Schäfer-Verwimp 2014** as *Tylimanthus laxus*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,420 m, *Schäfer-Verwimp & Verwimp 34382/A* (JE, **Schäfer-Verwimp 2014** as *Tylimanthus laxus*). DARIÉN: Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9269* (PMA, **Stotler et al. 1998** as *Tylimanthus approximatus*); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein* (JE-H3600, **Burghardt 2007** as *Tylimanthus laxus*; **Burghardt and Gradstein 2008** as *Tylimanthus laxus*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Tylimanthus approximatus*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Tylimanthus approximatus*); S. loc. (Schäfer-Verwimp 2014 as *Tylimanthus laxus*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

*****Acrobolbus wilsonii*** Nees, *Syn. Hepat.* 1: 5, 1844 (Gottsche et al. 1844). Type: Ireland.

***COSTA RICA.** S. loc. (Schuster 2021). *SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, 1,950 m, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0057*, det. R. Grolle (CR-3747022!, **this publication**).

Acrobolbus wilsonii has only been published from Costa Rica without any further details. This is the first confirmed report from Central America. Also reported from Northern Europe, Macaronesia, Mexico, the Caribbean(?), Northern South America, Western South America.

Acrolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)* 128, 1893 (Schiffner 1893a).

Acrolejeunea emergens (Mitt.) Steph., *Pflanzenw. Ost-Afrikas C*: 65, 1895 (Stephani 1895b) var. ***emergens***.

≡*Phragmicoma emergens* Mitt., *Philos. Trans.* 168: 397, 1879 (Mitten 1879). Type: Rodriguez Island.

GUATEMALA. BAJA VERAPAZ: S. loc., 2007, *Pérez* (USCG, **Barillas de Klee et al. 2008**).

COSTA RICA. GUANACASTE: La Cruz cantón, Santa Rosa National Park, Península Santa Elena, Playa Gringos, quebrada Despeñadero, 0–50 m, 27 Aug 2003, *Dauphin et al. 3291* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). PUNTARENAS: Osa cantón, Rincón, Puerto Escondido, 10 m, *Gradstein & Dauphin 9374* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Bastos 2004). BOCAS DEL TORO: Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Caswell-Levy 1037* (PMA, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen 9197* (PMA, U, **Gradstein and Salazar Allen 1992**; **Stotler et al. 1998**). PANAMA: Panamá distrito, between Madden Dam and Saddle II near Alahuela, Nov 1934, *Dodge 16872* (MO, **Gradstein 1975, 1994**; **Stotler et al. 1998**); Panamá distrito, Cerro Pirre, *Salazar Allen & Gradstein 9197* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Panamá distrito, Cerro Pirre, *Salazar Allen & Gradstein 9205* (PMA, **Stotler et al. 1998**).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Acrolejeunea heterophylla (A.Evans) Grolle et Gradst., *J. Hattori Bot. Lab.* 38: 332, 1974 (Gradstein 1974).

≡*Ptychocoleus heterophyllus* A.Evans, *Amer. J. Bot.* 5(3): 144, 1918 (Evans 1918). Type: USA, Florida.

GUATEMALA. S. loc. (Schuster 1980d; Fulford and Sharp 1990). IZABAL: Puerto Barrios, *Steyermark 39828* (F, hb. Fulford, **Gradstein 1975, 1994**; **Freire 2006**; **Pérez 2009**).

BELIZE. S. loc. (Schuster 1980d; Fulford and Sharp 1990). *BELIZE: Tropical Education Center Mile 28–29 on Western Highway, 17°21′N, 88°32′W, 10 m, 5 Dec 1996, *Allen 17961*, det. Whittemore 1997 (MO-4417018! https://tropicos.org/specimen/90046814, **this publication**); same location, *Allen 17970*, det. Whittemore 1996 (MO-4417017! https://tropicos.org/specimen/90046815, **this publication**); same location, *Allen 17973*, det. Dauphin May 2017 (MO-5228036! https://tropicos.org/specimen/90102215, **this publication**). TOLEDO: Punta Gorda, Nov 1932 (hb. Fulford ex MO, **Gradstein 1975, 1994**); S. loc. (Whittemore and Allen 1996).

HONDURAS. S. loc. (Svihla 1939 as *Ptychocoleus heterophyllus*; Frye and Clark 1947 as *Ptychocoleus heterophyllus*; Schuster 1954 as *Ptychocoleus heterophyllus*; Gradstein 1974; Bonner 1977; Schuster 1980d; Fulford and Sharp 1990); S. loc., 1903, *Wilson 15037*, det. Evans as *Ptychocoleus heterophyllus* (MO-5217888! https://tropicos.org/specimen/90089269, **this publication**); S. loc., Jan 1920, *Wilson 225* (**Evans 1922** as *Ptychocoleus heterophyllus*). ATLÁNTIDA: La Ceiba municipio, Pico Bonito National Park, at campamento Curla and confluence of Rio Bonito and Quebrada Grande, 15°42′N, 86°51′W, 95–165 m, 11 Apr 1996, *Allen 17205*, det. G.-Dauphin May 2017 (MO-4428658! https://tropicos.org/specimen/90039834, **this publication**); Tela municipio, along Highland Creek, near Puerto Sierra, ~0 m, Feb 1903, *Wilson 569* (**Evans 1918** as *Ptychocoleus heterophyllus*; **Gradstein 1975**). FRANCISCO MORAZÁN: Distrito Central municipio, La Montanita, Oct 1946, *Standley 12355* (F, **Gradstein 1975, 1994**).

NICARAGUA. S. loc. (Schuster 1954 as *Ptychocoleus heterophyllus*; Gradstein 1974; Bonner 1977; Schuster 1980d). ATLÁNTICO NORTE: Bilwi municipio, Sandy Bay, Jan 1920, *Hamilton 224, 225* (DUKE, FH, YU, **Evans 1922** as *Ptychocoleus heterophyllus*; **Gradstein 1975, 1994**).

COSTA RICA. S. loc. (Mustelier 2012). CARTAGO: Turrialba, *Schultes 11885* (NY, **Thiers 1985**; **Gradstein 1994**; **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Southeastern USA, Mexico, the Caribbean, Brazil.

Acrolejeunea torulosa (Lehm. et Lindenb.) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

≡*Jungermannia torulosa* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 41, 1834 (Lehmann 1834). Type: Guiana.

≡*Ptychocoleus torulosus* (Lehm. et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 405, 1877 (Trevisan 1877).

BELIZE. S. loc. (**Fulford 1938** as *Ptychocoleus torulosus*). *TOLEDO: Punta Gorda, Nov 1932, *White 9* (MO-5286184!), *57* (MO-5286185!), *63* (MO-5286186!), *67* (MO-5286229!), *79* (MO-5286188!), *81* (MO-5286198!), *84* (MO-5286187!), *97* (MO-5286194!), *100* (MO-5286195!), *110* (MO-5375419!), all det. Fulford 1937 (**this publication**).

HONDURAS. FRANCISCO MORAZÁN: Quebrada de Santa Clara, *Standley & Williams 169* (F, **Gradstein 1975** as *Acrolejeunea torulosa* var. *torulosa*), *LA PAZ: Los Planes, ~5 km W of San Pedro de Tutule, 14°15′N, 88°54′W, 28 Mar 1933, *Allen 14556*, det. A. Whittemore 1996 (MO-4428653! http://tropicos.org/specimen/90040017, **this publication**).

COSTA RICA. GUANACASTE: La Cruz cantón, Guanacaste National Park, Sector Santa Rosa, Mirador Santa Elena, 310 m, *Dauphin 2294* (CR, **Dauphin et al. 1998**; **Dauphin 2005**).

PANAMA. BOCAS DEL TORO: Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Gudiño 3321*, det. Gudiño Aug 2017 (PMA, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

***Adelanthus* Mitt., *J. Proc. Linn. Soc., Bot.* 7(28): 243, 1864 (Mitten 1864).**

Adelanthus carabayensis (Mont.) Grolle, *J. Hattori Bot. Lab.* 35: 348, 1972 (Grolle 1972c).

≡*Plagiochila carabayensis* Mont., *Ann. Sci. Nat. Bot.*, sér. 4, 5: 348, 1856 (Montagne 1856a). Type: Peru.

***HONDURAS.** *COMAYAGUA: From Agua Amarilla to San José de Los Planes, 14°47′N, 87°51′W, 1,300–1,700 m, 14 Mar 1993, *Allen 13993*, det. Dauphin May 2017 (MO-5227628! http://tropicos.org/specimen/90096772, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp and Van Melick 2016). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9569* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**). *SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, *Dauphin et al. 3570* (CR!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Adelanthus lindenbergianus (Lehm.) Mitt., *J. Proc. Linn. Soc., Bot.* 7(28): 244, 1864 (Mitten 1864).

≡*Jungermannia lindenbergiana* Lehm., *Linnaea* 4(3): 367, 1829 (Lehmann 1829). Type: South Africa.

=*Jungermannia unciformis* Hook.f. et Taylor, *London J. Bot.* 3: 457, 1844 (Hooker and Taylor 1844a), syn. fide Mitten (1860b). Type: Tierra del Fuego.

≡*Adelanthus unciformis* (Hook.f. et Taylor) Spruce, *J. Bot.* 14(5): 200, 1876 (Spruce 1876b).

=*Plagiochila subviminea* Steph., *Biblioth. Bot.* 21(87): 212, 1916 (Stephani 1916b), syn. fide Grolle (1972c). Type: Bolivia.

=*Plagiochila subviminea* Steph. var. *paramicola* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 55, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle (1972c).

≡*Plagiochila subviminea* f. *paramicola* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 12, 1939 (Herzog 1938). Lectotype (Grolle 1972c: 343 as "holotype"): Costa Rica, San José, Cerro de Las Vueltas, *Standley 43862* (JE-00404866 https://je.jacq.org/JE04004866, isolectotype US-00072815 http://n2t.net/ark:/65665/3bafcc490-98ce-4e95-9b9a-c42204d02ea5).

=*Adelanthus parvus* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 18, 1939 (Herzog 1938), syn. fide Grolle (1972c). Lectotype (Grolle 1972c: 343 as "holotype"): Costa Rica, San José, Cerro de las Vueltas, 2,700–3,000 m, *Standley 43723c* (JE-04002323 https://je.jacq.org/JE04002323).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, 14°32′N, 88°39′W, 2,550 m, 13 May 1992, *Allen 12021*, det. Whittemore 1993 (MO-3968260! http://tropicos.org/specimen/101212889, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Grolle 1969a; Gradstein et al. 1977; Cole 1982, 1983 as *Adelanthus parvus*; Karczmarz 1983 as *Adelanthus unciformis*; Fulford and Sharp 1990; Gradstein 1999a; Paton 1999; Dauphin 2005; Gradstein and Holz 2005; Costa et al. 2020). CARTAGO: Páramo Buenavista, *Holz et al. AHH-132* (**Dauphin 2005**). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, *Standley & Valerio 43862*, det. Herzog as *Adelanthus unciformis* (B-18603, JE-04004866 https://je.jacq.org/JE04004866, **TYPE** of *Plagiochila subviminea* f. *paramicola*, **Carl 1931b** as *Plagiochila subviminea* var. *paramicola*; **Herzog 1938** as *Plagiochila subviminea* f. *paramicola*; **Bonner 1962b** as *Plagiochila subviminea* f. *paramicola*; **Grolle 1972c**; **Engel 1978**; **Geissler and Bischler 1989** as *Plagiochila subviminea* f. *paramicola*; **Morales 1991**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley & Valerio 43943* (S, US, **Grolle 1972c**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43674*, det. Herzog (B-18604, **Carl 1931b** as *Plagiochila subviminea*; **Herzog 1938** as *Plagiochila subviminea*; **Morales 1991**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723c*, det. Grolle (JE-04002323 https://je.jacq.org/JE04002323, **TYPE** of *Adelanthus parvus*, **Herzog 1938** as *Adelanthus parvus*; **Bonner 1962a** as *Adelanthus parvus*; **Grolle 1972c**; **Engel 1978**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43819*, det. Herzog as *Adelanthus unciformis* (B-18604, **Carl 1931b** as *Plagiochila subviminea*; **Herzog 1938** as *Plagiochila subviminea*; **Morales 1991**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43943*, det. Herzog as *Adelanthus unciformis* (B-18604, **Carl 1931b** as *Plagiochila subviminea*; **Herzog 1938** as *Plagiochila subviminea*; **Morales 1991**; **Dauphin 2005**); Dota cantón, Cerro Sákira, 9°35′N, 83°46′W, 22 Apr 2000, *Holz CR 00-698* (GOET, MO-5382629!, **Feldberg et al. 2010b**); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, Páramo Buena Vista, 30 Sep 1999, *Heinrichs et al. AHH-132* (CR, GOET, **Holz et al. 2001**); Pérez Zeledón cantón, Páramo Cuericí, 9°35′N, 83°38′W, 17 Sep 1983, *Davidse 24801*, det. Whittemore Apr 1990 (MO-3671783!, **this publication**); S. loc., 2,700–3,000 m, *Standley & Valerio 43819* (S, US, **Grolle 1972c**); S. loc., 2,700–3,000 m, *Standley 43423c* (**Morales 1991**).

?PANAMA. S. loc. (Gradstein 1999a; Costa et al. 2020). Note: We are not aware of any firsthand report from Panama.

Also reported from Northern Europe, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Adelanthus pittieri (Steph.) Grolle, *J. Hattori Bot. Lab.* 35: 337, 1972 (Grolle 1972c).

≡*Tylimanthus pittieri* Steph., *Sp. Hepat. (Stephani)* 6: 250, 1922 (Stephani 1922). Lectotype (Grolle 1972c: 337 as "holotype"): Costa Rica, 1891, *Pittier & Durand 6058* (G-00113405 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146667&lang=en, isolectotype JE-04001083 https://je.jacq.org/JE04001083).

≡*Calyptrocolea pittieri* (Steph.) R.M.Schust., *Beih. Nova Hedwigia* 119: 193, 2002 (Schuster 2002).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, trail to ridge overlooking waterfall of Rio Arquecal, ~12 km S of Gracias,14°33′N, 88°40′W, 2,550 m, 16 May 1992, *Allen 12237*, det. Dauphin Jun 2017 (MO-3968260! http://tropicos.org/specimen/90096763, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc., 1,470–3,000 m (Bonner 1977; Cole 1982, 1983; Grolle 1989b; **Fulford and Sharp 1990**; Gradstein 1999a; Schuster 2002 as *Calyptrocolea pittieri*; **Dauphin 2005**; Gradstein and Holz 2005; Schäfer-Verwimp 2014); S. loc., *Kappelle 5690* (U, **Kappelle 1996**); S. loc., *Pittier & Durand*

(G, **Stephani 1922** as *Tylimanthus pittieri*; **Geissler and Bischler 1990** as *Tylimanthus pittieri*); S. loc., Feb 1891, *Pittier & Durand 6058* (G-00113405 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146667&lang=en, **TYPE** of *Tylimanthus pittieri*, **Burghardt 2007** as *Tylimanthus pittieri*; **Burghardt and Gradstein 2008** as *Tylimanthus pittieri*). ALAJUELA: Poás National Park, 2,650 m, *Gradstein 9654* (USJ, **Gradstein et al. 1994**); Poás Volcano, 2,500 m, 1929, *Valerio 80*, det. Herzog as *Adelanthus crossii* Spruce (B-18569, **Grolle 1972c**; **Morales 1991**); Poás Volcano, 30 Jul 1977, *Griffin & Araya 13*, *19*, *97* (FLAS, **Morales and Griffin 1983**; **Morales 1991**). *CARTAGO: Turrialba cantón, Turrialba National Park, *Dauphin et al. 3357* (CR!, **this publication**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31027* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Alobiellopsis R.M.Schust., *Nova Hedwigia* 10(1/2): 25, 1965 (Schuster 1965).

Alobiellopsis dominicensis (Spruce) Fulford, *Mem. New York Bot. Gard.* 11(3): 350, 1968 (Fulford 1968).

≡*Alobiella dominicensis* Spruce, *J. Linn. Soc., Bot.* 30(210): 355, 1895 (Gepp 1895). Type: Dominica.

COSTA RICA. S. loc. (Gradstein et al. 2001b; Lavocat Bernard et al. 2009; Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Norris et al. 17172* (UC, **Norris et al. 2017**). PUNTARENAS: Coto Brus cantón, Fila Cruces, 8°57′00″N, 83°04′20″W, 8 Jun 1995, *Dauphin 1766*, det. Dauphin Jun 1996 (MO-4417886!, **this publication**); Osa cantón, Rincón, trail to Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9322* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, trail to Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9328* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,170 m, *Stotler & Crandall-Stotler 3494* (ABSH, PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30748* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 785 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34293* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 785 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34294* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America(?), Western South America.

Anastrophyllum (Spruce) Steph., *Hedwigia* 32(3): 139, 1893 (Stephani 1893d).

Anastrophyllum auritum (Lehm.) Steph., *Bull. Herb. Boissier*, sér. 2, 1(11): 1137 (=*Sp. Hepat. [Stephani]* 1: 120), 1901 (Stephani 1901a).

≡*Jungermannia aurita* Lehm., *Linnaea* 4(3): 368, 1829 (Lehmann 1829). Type: South Africa.

=*Jungermannia leucostoma* Taylor, *London J. Bot. 5*: 272, 1846 (Taylor 1846b), syn. fide Váňa (1984). Type: Peru.

≡*Anastrophyllum leucostomum* (Taylor) Steph., *Hedwigia* 32(3): 140, 1893 (Stephani 1893d).

GUATEMALA. HUEHUETENANGO: S. loc., *Pérez 1243* (USCG, Pérez 2009).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Cole 1982, 1983 as *Anastrophyllum leucostomum*; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). ALAJUELA: Poás Volcano, *Griffin & Araya 508*, *511* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 30–31 Jul 1977, *Griffin & Araya 48*, *49* (**Morales and Griffin 1983** as *Anastrophyllum leucostomum*; **Morales 1991**; **Dauphin 2005**). *CARTAGO: El Guarco cantón, Reserva Forestal Rio Macho, base Cerro Buena Vista, 9°35′30″N, 83°45′30″W, 2 Nov 1995, *Dauphin & Ramírez 2070*, det. G.-Dauphin Oct 2020 (CR!, **this publication**). SAN JOSÉ: Chirripó National Park, 3,815 m, 22 Mar 1983, *Chaverri et al. 1123*, det. A. Cleef (B-273647, **Dauphin 2005**; **Álvaro 2011**; Álvaro and Uribe 2017); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cordillera de Talamanca, Buena Vista, 3,460 m, 9 Mar 1971, *Kuhbier 341* (B, Álvaro 2011; **Álvaro and Uribe 2017**); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro Buenavista (Cerro de La Muerte), 3,325 m, 21 Aug 1973, *Cleef & Fournier 10197* (USJ, **Gradstein et al. 1977** as *Anastrophyllum leucostomum*; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**); summit of El Barú, 3,225–3,447 m, 18 May 1976, *Croat 34936A*, det. Dauphin Jun 2017

(MO-5274392! https://tropicos.org/specimen/90132407, **this publication**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 371* (PMA, **Dauphin 2007**).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Malesia, Papuasia, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Anastrophyllum nigrescens (Mitt.) Steph., *Hedwigia* 32(3): 140, 1893 (Stephani 1893d).

≡*Jungermannia nigrescens* Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Váňa 1984; Gradstein 1999a, 2021; Dauphin 2005; Gradstein and Holz 2005). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, Dec 1925, *Standley 43845* (B-06887, **Herzog 1938**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**; Álvaro 2011); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, Páramo Buena Vista, 3,250 m, 20 Jan 2000, *Holz CR 00-203*, det. Váňa (B, MO-5282881!, **Álvaro 2011**; Álvaro and Uribe 2017).

Also reported from Northern South America, Western South America.

Anastrophyllum piligerum (Nees) Steph., *Hedwigia* 32(3): 140, 1893 (Stephani 1893d).

≡*Jungermannia piligera* Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 414, 1825 (Reinwardt et al. 1824a). Type: Java.

GUATEMALA. HUEHUETENANGO: S. loc., *Pérez 1241* (USCG, Pérez 2009).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Middle Atlantic Ocean, Western Indian Ocean, China, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?), Subantarctic Islands.

Anastrophyllum stellatum R.M.Schust., *Phytologia* 39(4): 243, 1978 (Schuster 1978a). Type: Venezuela.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Gradstein 2021). LIMÓN: Talamanca cantón, Chirripó National Park, Lago Dikevi, 3,600 m, *Dauphin 1249* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Anastrophyllum tubulosum (Nees) Grolle, *J. Hattori Bot. Lab.* 28: 101, 1965 (Grolle 1965c).

≡*Jungermannia tubulosa* Nees, *Enum. Pl. Crypt. Javae*: 32, 1830 (Nees 1830). Type: Brazil.

=*Jungermannia conformis* Lindenb. et Gottsche, *Syn. Hepat.*: 665, 1847 (Gottsche et al. 1847), syn. fide Váňa (1984). Type: Mexico.

≡*Anastrophyllum conforme* (Lindenb. et Gottsche) Steph., *Hedwigia* 32(3): 140 (Stephani 1893d).

?GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Anastrophyllum conforme*). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (Cole 1982, 1983 as *Anastrophyllum conforme*; Váňa 1984; Álvaro 2011; Álvaro and Uribe 2017; Lavocat Bernard 2018). ALAJUELA: Poás Volcano, 31 Jul 1977, *Griffin & Araya 87* (USJ, FLAS, **Morales and Griffin 1983** as *Anastrophyllum conforme*; **Morales 1991**; **Dauphin 2005**). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35201* (**Herzog 1938** as *Anastrophyllum conforme*; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerard, campo vacacional Chacón, camino hacia la Catarata, 1,950–2,000 m, 25 Dec 1999, *I. Holz* & A. Schäfer-*Verwimp*, det. J. Váňa (CR-3747115, **this publication**).

PANAMA. S. loc. (Pagán 1942b as *Anastrophyllum conforme*; Váňa 1984; **Stotler et al. 1998**; Lavocat Bernard et al. 2009 as *Anastrophyllum conforme*; Álvaro 2011; Álvaro and Uribe 2017; Lavocat Bernard 2018).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Aneura Dumort., *Commentat. Bot. (Dumortier)*: 115, 1822 (Dumortier 1822).

Aneura crumii L.Söderstr., A.Hagborg et von Konrat, *Phytotaxa* 65: 43, 2012 (Söderström et al. 2012b).

≡*Cryptothallus hirsutus* H.A.Crum, *Bryologist* 99(4): 438, 1996 (Crum and Bruce 1996). Holotype: Costa Rica, Cerro de la Muerte, growing underground among shrubby bamboos at 3,100 m elevation, 1977, *Bruce s.n.* (MICH-514755 http://quod.lib.umich.edu/h/herb00ic/x-514755/1).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Cryptothallus hirsutus*; **Holz and Gradstein 2005b** as *Cryptothallus hirsutus*); S. loc. (Gradstein 1999a as *Cryptothallus hirsutus*; Gradstein and Holz 2005 as *Cryptothallus hirsutus*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Gradstein et al. 2001b as *Cryptothallus hirsutus*; Dauphin 2005 as *Cryptothallus hirsutus*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,100 m, 1971, *Bruce* (MICH-514755 http://quod.lib.umich.edu/h/herb00ic/x-514755/1, **TYPE** of *Cryptothallus hirsutus*, **Crum and Bruce 1996** as *Cryptothallus hirsutus*; **Crosby and Engel 2006** as *Cryptothallus hirsutus*; **Söderström et al. 2012b**).

Not found outside Central America.

Aneura latissima Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 544, 1885 (Spruce 1885). Type: Brazil.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W(**Freire et al. 2005**).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3076* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Southwestern Europe(?), Macaronesia(?), West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Aneura pinguis (L.) Dumort., *Syll. Jungerm. Europ.*: 86, 1831 (Dumortier 1831).

≡*Jungermannia pinguis* L., *Sp. Pl.* 1: 1136, 1753 (Linnaeus 1753). Lectotype: Britain.

≡*Riccardia pinguis* (L.) Gray, *Nat. Arr. Brit. Pl.* 1: 683, 1821 (Gray 1821).

GUATEMALA. S. loc. (Ruklani and Rubasinghe 2022). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,000 m, *Pérez 327* (USCG, Pérez 2006, 2009). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 423*, *446* (USCG, **Freire 2006**; **Freire et al. 2013**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Union Camp, 16°23′17″N, 89°05′30″W, 600–700 m, 17 Feb 1997, *Allen 18535* (MO-5215167! http://tropicos.org/specimen/90088076), *18895* (MO-5215178! http://tropicos.org/specimen/90088088), det. Whittemore 2000 (**this publication**).

***NICARAGUA.** *JINOTEGA: Sebastián de Yalí municipio, N slope of Volcán Yalí, 13°15′N, 86°10′W, 1,200–1,400 m, *Stevens & Grijalva 15267*, det. Dauphin May 2017 (MO-4450977! http://tropicos.org/specimen/101411584, **this publication**).

COSTA RICA. S. loc. (Ruklani and Rubasinghe 2022). CARTAGO: Turrialba cantón, Reventazón River, east bank near Las Ánimas, ~3 mi E of the town of Turrialba, 1,800 ft (548 m), 22 Aug 1940, *Haupt* (**Haupt 1942** as *Riccardia pinguis*); Turrialba cantón, Reventazón, Las Ánimas (**Morales 1991**; Dauphin 2005). GUANACASTE: Bagaces cantón, Guanacaste National Park, Sector Volcán Cacao, *Dauphin 2445* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Dauphin 1816* (CR, MO, **Dauphin 2005**).

PANAMA. S. loc. (Ruklani and Rubasinghe 2022). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**). PANAMA: Panamá distrito, Cerro Jefe behind San Pablo Creek of Río Pequení, Chagres National Park, 200 m, *Salazar Allen & Chung 5224* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Spörle 0.9* (PMA, **Spörle 1990**; **Stotler et al. 1998**).

COCOS I. Cascada Yglesias, 10 m, 15 Feb 1994, *Dauphin 1136* (USJ, **Dauphin 1995**, **2005**); Catarata Río Genio, 5°32′57″N, 87°03′56″W, 140 m, 23 Jan 1990, *Dauphin 1000*, det. G.-Dauphin Mar 2021 (USJ-47449!, CR-4468320!, W!, **Dauphin 1995**, **2005**; **this publication**); Río Chatham, 5°32′57″N, 87°03′56″W, 40 m, 28 Jan 1990, *Dauphin 1096*, det. G.-Dauphin Mar 2021 (USJ-47646!, CR-4468321!, W!, **Dauphin 1995, 1999, 2005**; **this publication**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West Tropical Africa(?), West-Central Tropical Africa, East Tropical Africa, South Tropical Africa(?), Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, New Zealand, Southwestern Pacific, Southeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

***Anoplolejeunea* (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).**

Anoplolejeunea conferta (C.F.W.Meissn. ex Spreng.) A.Evans, *Bull. Torrey Bot. Club* 35(4): 175, 1908 (Evans 1908c).

≡*Jungermannia conferta* C.F.W.Meissn. ex Spreng., *Syst. Veg. (ed. 16) [Sprengel]* 4(2): 325, 1827 (Sprengel 1827a). Type: Peru.

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004**); S. loc., *Pérez 220* (USCG, Pérez 2009); S. loc., 2007, *Pérez* (USCG, **Barillas de Klee et al. 2008**); Senahú municipio, Finca Sepacuité, 1902, *Cook & Griggs 190* (**Evans 1935**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W, *Freire et al. 470* (USCG, **Freire et al. 2005, 2013**); S. loc., 2007, *Pérez* (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1182* (USCG, Pérez 2009). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUICHÉ: S. loc., *Pérez 2343* (USCG, Pérez 2009).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 3436* (U, **Kappelle 1996**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); S. loc., *Schäfer-Verwimp & Holz SV/H-0154* (M, **Heinrichs et al. 2014b**; **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a**, **2016c**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Ye and Zhu 2018**; **Zhu and Shu 2018**; **Ye and Wei 2021**; **Shu et al. 2022**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Santa María de Pittier, 4 Feb 1995, *Dauphin 1428* (CR, MO, **Dauphin 2005**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990,

Gradstein et al. (U, **Sillett et al. 1995**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**); La Quebrada, *Schäfer-Verwimp & Holz SV/H-0253* (CR, **Schäfer-Verwimp 2001**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Moravia cantón, La Palma, 1,600 m (Eggers 2001); Moravia cantón, La Palma, 1,500 m, *Valerio 35* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 616a* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Internacional La Amistad, Sendero El Retoño, 2,460 m, *Gradstein 9764* (GOET, **Stotler et al. 1998**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). NASO TJËR DI COMARCA: Cerro Fábrega, 11 Mar 2003, *De Gracia 228* (PMA, **Dauphin 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Archilejeunea (Spruce) Steph., *Hedwigia* 27(3/4): 113, 1888 (Stephani 1888d).

Archilejeunea fuscescens (Hampe ex Lehm.) Fulford, *Bryologist* 45(6): 174, 1942 (Fulford 1942b).

≡*Lejeunea fuscescens* Hampe ex Lehm., *Nov. Stirp. Pug.* 7: 16, 1838 (Lehmann 1838). Type: *Patria ignota*.

≡*Jungermannia juliformis* Nees, *Fl. Bras. (Martius)* 1(1): 351, 1833 (Nees 1833b), nom. illeg. syn. fide Gradstein and Buskes (1985). Type: Brazil.

=*Archilejeunea juliformis* (Nees) Gradst., *Bryophyt. Biblioth.* 4: 127, 1975 (Gradstein 1975).

≡*Ptychocoleus juliformis* (Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4: 405, 1877 (Trevisan 1877).

≡*Acrolejeunea juliformis* (Nees) Steph., *Hedwigia* 29(3): 133, 1890 (Stephani 1890a), nom. inval. (ICN2018 Art. 35.1; genus not valid).

=*Lejeunea rufa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 94, 1884 (Spruce 1884), syn. fide Gradstein (1975). Type: Brazil.

≡*Archilejeunea rufa* (Spruce) Steph., *Sp. Hepat[Stephani]* 4: 719, 1911 (Stephani 1911b).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54384* (JE, **Herzog 1951** as *Ptychocoleus juliformis*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55207* (C, F, **Herzog 1951** as *Archilejeunea rufa*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55235* (**Herzog 1951** as *Archilejeunea rufa*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55579* (**Herzog 1951** as *Archilejeunea rufa*).

COSTA RICA. S. loc. (Gradstein 1987; Ilkiu-Borges 2000; Germano 2003; Gradstein and Costa 2003; Bastos 2004; Germano and Pôrto 2005; Alvarenga et al. 2008; Morales et al. 2008; Gradstein and Uribe 2016; Costa 2017; Costa et al. 2017 as *Archilejeunea juliformis*, 2020 as *Archilejeunea juliformis*). HEREDIA: Sarapiquí cantón, La Selva Biological Station, 10°26′N, 84°03′W, May 1997, *Lücking 97-53*, det. Bernecker (EGR, GOET, E, W, MO-5135655, **Wilson et al. 2007**; **Heinrichs et al. 2012c, 2014a, 2014b**; **Dong et al. 2013**; **Schäfer-Verwimp et al. 2014**; **Shi and Zhu 2015**; **Shi et al. 2015**; **Wang et al. 2014, 2016**; **Bechteler et al. 2016a, 2016c**; **Zhu et al. 2017, 2018a, 2018b, 2019**; **Zhu and Shu 2018**; **Shu et al. 2022**). PUNTARENAS: Osa cantón, Rincón, Boscosa, 150 m, *Gradstein & Dauphin 9345* (U, USJ, **Shi and Zhu 2015**); Osa cantón, Rincón, Boscosa, 150 m, *Gradstein & Dauphin 9348* (HSNU, U, USJ, **Shi and Zhu 2015**); S. loc., *Gradstein 9345* (GOET, HSNU, **Shi et al. 2015**).

PANAMA. S. loc. (**Stephani 1912a** as *Ptychocoleus juliformis*; Bonner 1962a as *Acrolejeunea juliformis*; Stotler et al. 1998). BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño 3365*, det. Gudiño Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017, *Dauphin et al. 4606* (PMA, **Salazar Allen et al. 2022** as *Archilejeunea juliformis*).

COCOS I. Chatham bay, *Weber 580* (GOET, U, **Gradstein and Buskes 1985** as *Archilejeunea juliformis*); S. loc. (Dauphin 1995, 1999; Gradstein 2021 as *Archilejeunea juliformis*); S. loc., *Weber 589* (COLO, U, **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Archilejeunea ludoviciana (De Not.) P.Geissler et Gradst., *J. Hattori Bot. Lab.* 75: 202, 1994 (Geissler and Gradstein 1994) subsp. ***ludoviciana***.

≡*Phragmicoma ludoviciana* De Not., *Nov. Stirp. Pug.* 10: 11, 1857 (Lehmann 1857). Type: Tropical America.

=*Archilejeunea porelloides* (Spruce) Schiffn. subsp. *chocoensis* Gradst., *Fl. Neotrop. Monogr.* 62: 59, 1994 (Gradstein 1994), nom. inval. (ICN2018 Art. 36.1; not accepted by author), syn. fide Gradstein et al. (2006a). Original material: Colombia.

COSTA RICA. PUNTARENAS: Golfito cantón, Refugio de Vida Silvestre, 5 km N del Aeropuerto, 8°41′12″N, 83°11′52″W, 2 Feb 1992, *Aguilar 914*, det. Dauphin (CR, **Dauphin 2005** as *Archilejeunea porelloides* subsp. *chocoensis*); Osa cantón, Península de Osa, Cerro Helado, 250–300 m, *Gradstein & Dauphin 9358* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Península de Osa, Cerro Helado, 250–300 m, *Gradstein & Dauphin 9360* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, Boscosa, 150 m, *Gradstein & Dauphin 9345* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, Boscosa, 150 m, *Gradstein & Dauphin 9348* (HSNU, U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc. (Shi and Zhu 2015). DARIÉN: Ridge trail above Cana to Pirre Massif, 800–900 m, 5 May 1990, *Allen 8970*, det. Dauphin May 2017 (MO-3678093, **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, slopes of Cerro Tute, *Gentry 6272A* (MO-3675254, NY, PMA, U, **Gradstein 1994** as *Archilejeunea porelloides* subsp. *chocoensis*; **Stotler et al. 1998**).

Also reported from Northern South America, Western South America.

Asterella P.Beauv., *Dict. Sci. Nat. (F. Cuvier)* 3: 257, 1805 (Palisot de Beauvois 1805a).

Asterella dominicensis S.W.Arnell, *Bryologist* 61(2): 140, 1958 (Arnell 1958b). Type: Dominican Republic.

GUATEMALA. S. loc. (Schäfer-Verwimp and Pócs 2009). SACATEPÉQUEZ: Antigua Guatemala municipio, 55 km N of Antigua, 2,370 m, 14 Sep 1977, *Volk 6/0711b* (JE, S, **Bischler-Causse et al. 2005**; **Grolle 1989c**; **Pérez 2009**).

***EL SALVADOR.** *LA LIBERTAD: Cafetal en Colonia Cumbres de Cuscatlán, 13°42′N, 89°15′W, 950 m, 11 Mar 1998, *Renderos et al. MR-00457*, det. J. Brinda & G. Dauphin Jun 2017 (MO-5261683! http://tropicos.org/specimen/90145839, **this publication**).

***NICARAGUA.** *JINOTEGA: San Rafael del Norte municipio, 2 km NW of San Rafael del Norte road to San Sebastian de Yalí, 13°13′N, 86°07′W, 1,200 m, 25 Oct 1979, *Stevens & Grijalva 15071*, det. J. Brinda & G. Dauphin Jun 2017 (MO-4452337! http://tropicos.org/specimen/90025188, **this publication**).

COSTA RICA. S. loc. (**Morales 1991**; Dauphin 2005; Schäfer-Verwimp and Pócs 2009). HEREDIA: La Uvita, 1,720 m, 16 Jul 1971, *Morales 259* (JE, hb. Griffin III, **Grolle 1989c**). PUNTARENAS: Upper Rio Burú, 19 Aug 1983, *Gómez-Pignataro et al. 21701* (MO, **Bischler-Causse et al. 2005**).

Also reported from Mexico, the Caribbean, Northern South America.

Asterella echinella (Gottsche) Underw., *Bot. Gaz.* 20(2): 62, 1895 (Underwood 1895).

≡*Fimbraria echinella* Gottsche, *Mexik. Leverm.*: 271, 1863 (Gottsche 1863). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Rio Cobán, 5 km NE of Cobán, *Richards et al. 2869* (F, H, NY-01778246 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=2030120, U, **Bischler-Causse et al. 2005**; **Pérez 2009**).

BELIZE. CAYO: Monkey Tail River 5 mi (8 km) E of Las Cuevas Field Station, *Collins & Ensoll 5* (E, **Bischler-Causse et al. 2005**).

HONDURAS. S. loc. (Stotler and Crandall-Stotler 2017). COMAYAGUA: Ojos de Agua municipio, Ojos de Agua 30 km N of Comayagua, *Nelson et al. 6831* (MO, **Bischler-Causse et al. 2005**). *YORO: Victoria municipio, Rio Sulaco, 339 m, 21–23 Jan 1981, *Nelson et al. 7020*, det. Whittemore 1989 (MO-3656763! https://tropicos.org/specimen/768574, **this publication**).

Also reported from Southeastern USA, Mexico.

Asterella elegans (Spreng.) Trevis., *Rendiconti Reale Ist. Lombardo Sci.*, ser. 2, 7: 785, 1874 (Trevisan 1874).

≡*Fimbraria elegans* Spreng., *Syst. Veg. (ed. 16) [Sprengel]* 4(1): 235, 1827 (Sprengel 1827b). Type: Hispaniola.

≡*Hypenantron elegans* (Spreng.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 441, 1847 (Trevisan 1877).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 73*, *494* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

†**COSTA RICA.** S. loc. (Bonner 1966 as *Hypenantron elegans*; Bapna and Kachroo 2000b); S. loc., *Wendland* (**Stephani 1899a** as *Fimbraria elegans*). Note: This report is sensu Spruce and thus *Asterella lateralis* (cf. Evans 1920).

Also reported from the Caribbean, Western South America(?).

Asterella lateralis M. Howe, *Bull. Torrey Bot. Club* 25(4): 189, 1898 (Howe 1898). Type: Mexico.

GUATEMALA. S. loc. (Ellis et al. 2018b). QUETZALTENANGO: Zunil municipio, Volcán Zunil, *Steyermark 34610* (F, JE, **Bischler-Causse et al. 2005**; **Pérez 2009**). SACATEPÉQUEZ: Cuesta de las Cañas, above Antigua, *Standley 58935* (MICH, F, NY-1778249 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=2030141, **Bischler-Causse et al. 2005**; **Pérez 2009**). SAN MARCOS: Along Quebrada Canjula, between Sibinal and Canjula, Volcán Tacaná, *Steyermark 36027* (F, **Bischler-Causse et al. 2005**; **Pérez 2009**).

?BELIZE. S. loc. (Robinson 1967). Note: We are not aware of any firsthand report from Belize.

COSTA RICA. S. loc. (Haynes et al. 1923; Svihla 1942; Cole 1984; Ellis et al. 2018b); S. loc., *Wendland* (**Evans 1920**). ALAJUELA: Naranjo cantón, San Miguel Oeste, SE slope of Espíritu Santo, *Herrera 52B*, det. Whittemore (CR, **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, mountains S of village 5.5 (9 km) mi S of San José, 6,000 ft (1,829 m), 23 Jul 1940, *Haupt* (**Haupt 1942**); Dota cantón, Santa María, *Standley & Valerio 43413* (F, JE, NY, US, **Bischler-Causse et al. 2005**); Escazú cantón, Escazú, mountains SW of village, 17 Jul 1940, *Haupt* (**Haupt 1942**); Montañas de Escazú y Aserrí (**Morales 1991**; Dauphin 2005).

PANAMA. S. loc. (Ellis et al. 2018b). CHIRIQUÍ: Boquete distrito, Alto Quiel, *Salazar Allen 3996* (PMA, **Bischler-Causse et al. 2005**); Boquete, 3 Sep 1940, *Svihla 40-429* (**Svihla 1942**; **Stotler et al. 1998**); Boquete, 3 Sep 1940, *Svihla 40-432*, *40-434* (**Svihla 1942**; **Stotler et al. 1998**).

Also reported from Mexico, Western South America.

Asterella macropoda (Spruce) A.Evans, *Bull. Torrey Bot. Club* 46(12): 472, 1919 (Evans 1919a).

≡*Fimbraria macropoda* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 564, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Gradstein et al. 2001b, 2016; Dauphin 2005; Gradstein and Holz 2005). CARTAGO: Cerro de La Muerte along Pan-American Highway,

Gradstein 9728 (E, GOET, **Long et al. 2000**; **Bischler-Causse et al. 2005**). SAN JOSÉ: Dota cantón, Copey, Reserve Forestal Los Santos, Pan-American Highway sur km 93, 3,200 m, *Gradstein 9730* (U, USJ, **Gradstein et al. 1994**); Pérez Zeledón cantón, Reserva Forestal Los Santos, Cuenca del Río Savegre, *Dauphin & Ramírez 2646*, det. Dauphin (CR, **Dauphin 2005**).

PANAMA. NASO TJËR DI COMARCA: Cerro Fábrega, ~2 km SW of Itamut camp, *Gómez-Pignataro et al. 22638* (U, **Bischler-Causse et al. 2005**).

Also reported from Northern South America, Western South America, Southern South America.

Asterella pringlei Underw., *Bot. Gaz.* 20(2): 64, 1895 (Underwood 1895). Type: Mexico.

=*Fimbraria stahlii* Steph., *Bull. Herb. Boissier* 7(3): 20 [=*Sp. Hepat.* 1: 127], 1899 (Stephani 1899a), syn. fide Bischler-Causse et al. (2005). Lectotype: Mexico.

GUATEMALA. S. loc. (Bonner 1965 as *Fimbraria stahlii*; Aleffi and Schumacker 1995 as *Fimbraria stahlii*; Long 2005; Gradstein et al. 2016; Gradstein 2021); S. loc., *Bernouilli* (**Stephani 1899d** as *Fimbraria stahlii*; **Evans 1920** as *Fimbraria stahlii*). JALAPA: Jalapa, *Standley 76640* (JE, F, **Bischler-Causse et al. 2005**; **Pérez 2009**). SANTA ROSA: Barberena municipio, along road SE of Barberena, *Standley 77800* (JE, F, **Bischler-Causse et al. 2005**; **Pérez 2009**). SUCHITEPÉQUEZ: Mazatenango, *Bernouilli* (G-00120172 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=168720&lang=en, **SYNTYPE** of *Fimbraria stahlii*).

?COSTA RICA. S. loc. (Cole 1984). ?SAN JOSÉ: Escazú cantón, Escazú, Montañas de Escazú, mountains SW of village, 7–8 Jul 1940 (Dauphin 2005 as *Asterella* cf. *pringlei*); Escazú cantón, Escazú, mountains SW of village, 17 Jul 1940, *Haupt* (Haupt 1942, identification doubtful); Montañas de Escazú y Aserrí (Morales 1991 as *Asterella* cf. *pringlei*). Note: We are not aware of any positively identified specimen from Costa Rica.

Also reported from Mexico, Western South America.

Asterella versicolor A.Evans, *Contr. U.S. Natl. Herb.* 20: 307, 1920 (Evans 1920). Type: Mexico.

COSTA RICA. S. loc. (Long 2005). ALAJUELA: Naranjo cantón, San Miguel Oeste, Cerro Espíritu Santo, finca Napoleon, *Pérez & Herrera 52B* (MO, **Bischler-Causse et al. 2005**).

PANAMA. S. loc. (Long 2005). CHIRIQUÍ: Boquete distrito, Alto Quiel, *Salazar Allen 3989* (PMA, **Bischler-Causse et al. 2005**).

Also reported from Mexico.

Bazzania Gray, *Nat. Arr. Brit. Pl.* 1: 704, 1821 (Gray 1821).

Bazzania acanthostipa Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 381, 1885 (Spruce 1885). Type: Peru.

COSTA RICA. SAN JOSÉ: Pérez Zeledón cantón, Chirripó National Park, Paso de los Indios, 9°30′N, 83°30′W, 3,270 m, *Kappelle 4611* (U, GOET, **Kappelle 1996**; **Dauphin et al. 1998**; **Dauphin 2005**).

Also reported from Western South America.

Bazzania acuminata (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877).

≡*Mastigobryum acuminatum* Lindenb. et Gottsche, *Syn. Hepat.* 5: 719, 1847 (Gottsche et al. 1847). Type: Mexico.

COSTA RICA. S. loc., *Kappelle 1903* (CR, **Kappelle 1996**).

Also reported from Mexico, Northern South America.

Bazzania affinis (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877).

≡*Mastigobryum affine* Lindenb. et Gottsche, *Syn. Hepat.* 5: 720, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Mastigobryum taleanum* Gottsche, *Mexik. Leverm.*: 131, 1863 (Gottsche 1863), syn. fide Gradstein (2017a). Type: Mexico.

≡*Bazzania taleana* (Gottsche) Fulford, *Ann. Cryptog. Phytopathol.* 3: 54, 1946 (Fulford 1946).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Rico and Pócs 2004). ALTA VERAPAZ: Pitoreal, *Sharp 2771b* (TENN, **Fulford 1959a, 1963a**; **Freire 2006**; **Pérez 2009**); S. loc., *Pérez 99* (USCG, Pérez 2009 as *Bazzania taleana*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Bazzania* cf. *taleana*). HUEHUETENANGO: S. loc., *Pérez 1427* (USCG, Pérez 2009 as *Bazzania taleana*). QUICHÉ: S. loc., *Pérez 2322* (USCG, Pérez 2009 as *Bazzania taleana*).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18806*, det. Dauphin May 2017 (MO-4417031! http://tropicos.org/specimen/90046799, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 19 Feb 1997, *Allen 18942*, det. Dauphin May 2017 (MO-4417032! http://tropicos.org/specimen/90046798, **this publication**); Columbia River Forest Reserve, Union Camp, 16°23′54″N, 89°08′29″W, 600–700 m, 10 Feb 1997, *Allen 18500*, det. Dauphin May 2017 (MO-4417030! http://tropicos.org/specimen/90046800, **this publication**).

COSTA RICA. HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1508* (**Dauphin 2005** as *Bazzania* cf. *taleana*); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1758*, det. Morales (USJ, **Morales 1991** as *Bazzania* cf. *taleana*; **Dauphin 2005** as *Bazzania* cf. *taleana*); Barva cantón, Volcán Barva, *Morales 1580*, det. Bernecker (USJ, **Morales 1991** as *Bazzania* cf. *taleana*). PUNTARENAS: Monteverde cantón, Chimogo trail, 15 Mar 1971, *James, W.*, det. Dauphin May 2017 (MO-6168498!, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Santa Elena Biological Preserve, 10°15′N, 84°45′W, 4 Aug 1993,

Timme 11337, det. Dauphin May 2017 (MO-6690005! https://tropicos.org/specimen/100861247, **this publication**); Monteverde, 1,550 m, *Gradstein & Solano 9510, 9576* (U, USJ, **Gradstein et al. 1994; Dauphin 2005**); S. loc. (**Merwin et al. 2001**).

COCOS I. Above Wafer, 160 m, 15 Feb 1994, *Dauphin 1063 p.p.*, det. A. Bernecker (USJ, **Gradstein et al. 1994; Dauphin 1995, 1999, 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Bazzania aurescens Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 374, 1885 (Spruce 1885). Type: Peru.

=*Mastigobryum quadricrenatum* Gottsche ex Steph., *Hedwigia* 25(5): 206, 1886 (Stephani 1886d). Type: Guadeloupe.

≡*Bazzania quadricrenata* (Gottsche ex Steph.) Pagán, *Bryologist* 42(2): 39, 1939 (Pagán 1939c), syn. fide Gradstein and Costa (2003).

GUATEMALA. ALTA VERAPAZ: Pitoreal, 24 Feb 1945, *Sharp 2776b* (TENN-B-0095812, **Fulford 1959a, 1963a** as *Bazzania quadricrenata*; **Freire 2006** as *Bazzania quadricrenata*; Pérez 2009 as *Bazzania quadricrenata*); S. loc., *Pérez 371* (USCG, Pérez 2009); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (**Pérez 2006**). BAJA VERAPAZ: Pitoreal over mountain from Finca Bucaral but in Baja Verapaz, 24 Feb 1945, *Sharp 2781* (TENN-B-0095811 https://bryophyteportal.org/portal/collections/individual/index.php?occid=4454082&clid=0, **Fulford 1959a, 1963a** as *Bazzania quadricrenata*; **Freire 2006** as *Bazzania quadricrenata*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15262* (BRH, MO, **Whittemore and Allen 1996** as *Bazzania quadricrenata*).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, Sendero El Guaje, 11 Nov 2014, *Búcaro H350*, det. Dauphin 2016 (MHES!, **this publication**); Santa Rosa Guachipílín municipio, Calle Los Planes, 11 Dec 2014, *Búcaro H353*, det. Dauphin 2016 (MHES!, **this publication**).

COSTA RICA. ALAJUELA: Zarcero cantón, 7.5 mi (12 km) north of Zarcero, 1,000 m, *Croat 43498*, det. Whittemore (CR, **Dauphin 2005** as *Bazzania quadricrenata*).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from China(?), Indo-China(?), the Caribbean, Northern South America, Western South America, Brazil.

Bazzania bidens (Gottsche et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877) var. ***bidens***.

≡*Mastigobryum bidens* Gottsche et Lindenb., *Syn. Hepat.* 2: 228, 1845 (Gottsche et al. 1845b). Type: Guyana.

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953; Stotler et al. 1998**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania brasiliensis (Gottsche et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877).

≡*Mastigobryum brasiliense* Gottsche et Lindenb., *Syn. Hepat.* 2: 227, 1845 (Gottsche et al. 1845b). Type: Brazil.

COSTA RICA. S. loc. (Bonner 1963a); S. loc., *Tonduz* (**Stephani 1909b** as *Mastigobryum brasiliense*).

Also reported from Northern South America, Brazil.

****Bazzania canelensis*** (Steph.) Fulford, *Ann. Cryptog. Phytopathol.* 3: 152, 1946 (Fulford 1946).

≡*Mastigobryum canelense* Steph., *Sp. Hepat. (Stephani)* 3: 518, 1909 (Stephani 1909b). Type: Ecuador.

***HONDURAS.** S. loc. (Gradstein 2021). *FRANCISCO MORAZÁN: Distrito Central municipio, La Tigre National Park, 11 km NE of Tegucigalpa, 14°07–19′N, 87°03–07′W, 2,000 m, 26 May 1992, *Allen 12398C*, det. Dauphin May 2017 (MO-5224562! https://tropicos.org/specimen/90095307, **this publication**).

New to Central America. Also reported from Western South America.

****Bazzania chilensis*** (Steph.) Spruce, *Mem. Torrey Bot. Club* 1(3): 129, 1890 (Spruce 1890).

≡*Mastigobryum chilense* Steph., *Hedwigia* 24(6): 247, 1885 (Stephani 1885b). Lectotype: Colombia.

***HONDURAS.** COPÁN: Copán municipio, Copán Ruinas, ~18 km N of ruins, road to Agua Caliente at El Zapote, 14°58′N, 89°10′W, 900–1,000 m, 30 Apr 1996, *Allen 17774*, det. Dauphin May 2017 (MO-6230302! http://tropicos.org/specimen/100366548, **this publication**).

?COSTA RICA. S. loc., *Kappelle 3898* (U, Kappelle 1996 as *Bazzania* cf. *chilensis*). Note: We are not aware of any positively identified specimen from Costa Rica.

New to Central America. Also reported from Western South America, Southern South America.

Bazzania cuneistipula (Gottsche et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877).

≡*Mastigobryum cuneistipulum* Gottsche et Lindenb., *Syn. Hepat.* 2: 225, 1845 (Gottsche et al. 1845b). Type: Jamaica.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 209, 491* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); S. loc., *Pérez 1732* (USCG, Pérez 2009).

***COSTA RICA.** S. loc. (Schäfer-Verwimp 2014). *PUNTARENAS: Monteverde, 1,311 m, Feb 1969, *James, W. 1969-106 p.p.*, det. Dauphin May 2017 (MO-6699945! https://tropicos.org/specimen/100988165, **this publication**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al.**

2021); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,660 m, *Schäfer-Verwimp & Verwimp 34429/A* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30784* (JE, **Schäfer-Verwimp 2014**).

†**COCOS I.** Reports of *Bazzania cuneistipula* from Cocos I. are reidentified as *Bazzania diversicuspis*.

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania denticulata (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877).

≡*Mastigobryum denticulatum* Lindenb. et Gottsche, *Syn. Hepat.* 5: 718, 1847 (Gottsche et al. 1847). Type: Mexico.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Lücking 5* (**Morales 1991; Dauphin 2005**); Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 24 Jan 2000, *Holz CR 00-224* (CR, GOET, **Holz et al. 2001**); Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 6 Mar 2000, *Holz CR 00-682* (CR, GOET, **Holz et al. 2001; Dauphin 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-33b*, *1969-34* (R, **Reed and Robinson 1971; Dauphin 2005**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Los Robles, 2,300 m, 29 Jan 2000, *Holz CR 00-268* (CR, GOET, **Holz et al. 2001; Dauphin 2005**); Dota cantón, San Gerardo, Paradero Lacustre "Los Ranchos," Sendero "El Riachuelo," 2,000 m, 14 Mar 2000, *Holz CR 00-770* (CR, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=19480&Z_CHK=64346, **Holz et al. 2001; Dauphin 2005**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Bazzania diversicuspis Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 373, 1885 (Spruce 1885). Type: Brazil.

***HONDURAS.** *COMAYAGUA: San Juanillo, Cordillera de Montecillos, Biological Reserve Forest, 14°30′N, 87°53′W, 1,700–2,000, 3 Jun 1993, *Liesner 26822*, det. Dauphin May 2017 (MO-6235789! http://tropicos.org/specimen/802083, **this publication**).

?COSTA RICA. S. loc. (Schäfer-Verwimp 2014). ?ALAJUELA: Poás Volcano, *Griffin & Araya 36*, det. Bernecker (Morales 1991 as *Bazzania* cf. *diversicuspis*; Dauphin 2005 as *Bazzania* cf. *diversicuspis*). Note: We are not aware of any positively identified specimen from Costa Rica.

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34586/A* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Cerro Pelón, 5°32′57″N, 87°03′56″W, 380 m, 15 Feb 1994, *Dauphin A-6* (USJ-47526!, **Dauphin 1995** as *Bazzania cuneistipula*, **1999** as *Bazzania cuneistipula*, **2005** as *Bazzania cuneistipula*; **this publication**, reidentification of the earlier reports); S. loc., *Soto*, det. G. Dauphin Feb 2021 (USJ-47692!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania falcata (Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877).

≡*Mastigobryum falcatum* Lindenb., *Syn. Hepat.* 2: 231, 1845 (Gottsche et al. 1845b). Type: Guadeloupe and St. Vincent.

=*Bazzania robusta* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 378, 1885 (Spruce 1885), syn. fide Gradstein et al. (2003). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Ramírez 114* (**Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Bazzania* cf. *falcata*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 108*, *114*, *258*, *259*, *315*, *450* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); S. loc., *Pérez 258* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2231* (USCG, Pérez 2009).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, N of Camp 2, 16°23′50″N, 89°05′36″W, 850 m, 18 Feb 1997, *Holst 5834*, det. Dauphin May 2017 (MO-5227765! http://tropicos.org/specimen/90100236, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford and Sharp 1990). ALAJUELA: San Ramón cantón, Los Ángeles, *Brenes 17117* (F, **Fulford 1959b, 1963a; Morales 1991; Dauphin 2005**); Upala cantón, Guanacaste National Park, Sector Santa María, Quebrada Provisión, *Dauphin 2317* (CR, **Dauphin 2005** as *Bazzania robusta*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin et al. 196* (USJ, **Morales 1991; Dauphin 2005**); Turrialba cantón, Peralta, *Alfaro 40* (**Fulford 1963a; Dauphin 2005**); Turrialba cantón, Peralta, *Alfaro 48* (F, **Morales 1991**); Turrialba cantón, Peralta, *Alfaro 48a* (**Fulford 1963a; Dauphin 2005**); Turrialba cantón, Peralta, *Alfaro 48f* (F, **Morales 1991**).

PANAMA. S. loc. (**Gradstein 1993** as *Bazzania robusta*). DARIÉN: Cerro Pirre, summit, 6 Jun 1991, *Salazar Allen & Gradstein 9285* (MO-5624130 Bryophyta Neotropica Exsiccata 278 as *Bazzania robusta*, **Gradstein 1993** as *Bazzania robusta*).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, *Dauphin 974*, det. G. Dauphin Feb 2021 (USJ-95750!, CR-4468142!, W!, **this publication**); Cerro Yglesias, 5°32′57″N,

87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 970* (USJ!, Dauphin 1995 as *Bazzania* cf. *robusta*, **2005** as *Bazzania robusta*); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 350–500 m, 31 Mar 1988, *Lücking 92-330*, det. G. Dauphin Apr 2021 (USJ-95746!, **this publication**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 500–634 m, 31 Mar 1988, *Lücking 92-331*, det. G. Dauphin Apr 2021 (USJ-108887!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Bazzania gracilis (Hampe et Gottsche) Steph., *Hedwigia* 27(11/12): 279, 1888 (Stephani 1888a).

≡*Mastigobryum gracile* Hampe et Gottsche, *Linnaea* 25(3): 346, 1853 (Hampe and Gottsche 1852). Type: Puerto Rico.

GUATEMALA. S. loc. (Jovet-Ast 1948; Arnell 1956b). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim*, hb. Stephani 5425 (NY-02704384 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=2997585, **Fulford 1946, 1963a** as *Mastigobryum phyllobolum*; **Freire 2006** as *Mastigobryum phyllobolum*; **Pérez 2009**); Cobán, 1,350 m, *Türckheim* (G in hb. Levier 5822, **Fulford 1963a** as *Mastigobryum phyllobolum*); Cobán, 1,350 m, 1907, *Türckheim*, hb. Levier 5826 (G, FI, **Freire 2006**); S. loc., 350 m, *Türckheim* (G ex hb. Levier 5822, NY, **Fulford 1959a**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 274*, *278* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); S. loc., *Freire 278* (USCG, Pérez 2009). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

HONDURAS. S. loc. (Schäfer-Verwimp and Pócs 2009). *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail at and above ridge camps, 15°38′N, 86°52′W, 1,500–1,630 m, 22 Apr 1996, *Allen 17495*, det. Dauphin May 2017 (MO-6236054! https://tropicos.org/specimen/100366534, **this publication**). COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 1,740–2,040 m, 12 Mar 1993, *Allen 13932*, det. Dauphin May 2017 (MO-5224567! https://tropicos.org/specimen/90095311, **this publication**); Siguatepeque municipio, El Achote, *Yuncker 6615 p.p.* (DPU, **Fulford 1959a, 1963a**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 1,500 m, 18 Mar 1993, *Allen 14073*, det. Dauphin May 2017 (MO-5224565! https://tropicos.org/specimen/90095313, **this publication**). *OCOTEPEQUE: La Labor municipio, Montana del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 2,000–2,180 m, 24 Mar 1993, *Allen 14493*, det. Dauphin May 2017 (MO-5224572! https://tropicos.org/specimen/90095318, **this publication**).

COSTA RICA. S. loc. (Jovet-Ast 1948; Arnell 1956b; Cole 1982, 1983; Schäfer-Verwimp and Pócs 2009); S. loc., 1900, *Wercklé* (YU, NY, **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, Jul 2007, *Norris 110161b* (UC-2054025, **Norris et al. 2017**), *110306* (UC-2053315, **Norris et al. 2017**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Dauphin 2930* (NY, **Dauphin 2005**). CARTAGO: El Guarco cantón, Santa Clara, *Torres 219.3* (F, **Fulford 1963a; Morales 1991; Dauphin 2005**); Paraíso cantón, Orosi, Tapantí, *Lücking 2* (USJ, **Dauphin 2005; Morales 1991**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Moravia cantón, Zurquí, 2,000–2,500 m, *Standley 48091* (US, B-19003, **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**).

PANAMA. PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850–1,000 m, *Salazar Allen et al. 9447* (PMA, **Stotler et al. 1998**).

COCOS I. Fila al este de Bahía Chatham, 5°32′57″N, 87°03′56″W, 150 m, 10 Mar 1990, *Dauphin 1190*, det. G. Dauphin Apr 2021 (USJ-47260!, CR-4468440!, W!, **this publication**); Fila al NE de Chatham, 200 m, 15 Feb 1994, *Dauphin 1190*, det. M. I. Morales (USJ, **Dauphin 1995, 1999, 2005** all as *Bazzania cubensis*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania hookeri (Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877) var. ***hookeri***.

≡*Mastigobryum hookeri* Lindenb., *Syn. Hepat.* 2: 226, 1845 (Gottsche et al. 1845b). Type: Guadeloupe.

=*Mastigobryum breutelianum* Lindenb. et Gottsche, *Syn. Hepat.*: 226, 1845 (Gottsche et al. 1845b), syn. fide Gradstein and Costa (2003). Type: St. Kitts.

≡*Bazzania breuteliana* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4: 414, 1877 (Trevisan 1877).

=*Mastigobryum arcuatum* Lindenb. et Gottsche., *Syn. Hepat.* 5: 718, 1847 (Gottsche et al. 1847), syn. fide Gradstein (2017a). Type: Mexico.

≡*Bazzania arcuata* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4: 414, 1877 (Trevisan 1877).

=*Mastigobryum teretiusculum* Lindenb. et Gottsche, *Syn. Hepat.* 720, 1847 (Gottsche et al. 1847), syn. fide Gradstein and Costa (2003). Type: Mexico.

≡*Bazzania teretiuscula* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4: 415 (Trevisan 1877).

=*Mastigobryum portoricense* Hampe et Gottsche, *Linnaea* 25(3): 348, 1853 (Hampe and Gottsche 1852), syn. fide Rico and Pócs (2004).

≡*Bazzania portoricensis* (Hampe et Gottsche) Steph., *Hedwigia* 27(11/12): 279, 1888 (Stephani 1888a). Type: Puerto Rico.

=*Mastigobryum schlimianum* Gottsche, *Ann. Sci. Nat., Bot.*, ser. 5, 1: 140, 1864 (Gottsche 1864), syn. fide Gradstein (2017a). Type: Colombia.

≡*Bazzania schlimiana* (Gottsche) Fulford, *Bull. Torrey Bot. Club* 86(6): 401, 1959 (Fulford 1959b).

=*Bazzania chimborazensis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 376, 1885 (Spruce 1885), syn. fide Gradstein (2017a). Type: Ecuador.

=*Bazzania heteroclada* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 379, 1885 (Spruce 1885), syn. fide Fulford (1963a). Type: Peru.

=*Mastigobryum latidens* Gottsche ex Steph., *Hedwigia* 25(4): 134, 1886 (Stephani 1886c), syn. fide Gradstein and Costa (2003). Type: Brazil.

≡*Bazzania latidens* (Gottsche ex Steph.) Fulford, *Ann. Cryptog. Phytopathol.* 3: 88, 1946 (Fulford 1946).

=*Mastigobryum asperistipulum* Steph., *Sp. Hepat. (Stephani)* 6: 453, 1924 (Stephani 1924), syn. with *Bazzania schlimiana* fide Fulford (1963a). Lectotype (Fulford 1963a: 156 as "type"): Guatemala, Alta Verapaz, Cobán, *Türckheim s.n.*, hb. Levier 5817 (G-00067589 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=123767&lang=en, isolectotypes JE-04001013 https://je.jacq.org/JE04001013, NY-253479 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=610740, NY-02697201 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=2985283).

≡*Bazzania asperistipula* (Steph.) Herzog, *Rev. Bryol. Lichénol.* 11(1): 19, 1939 (Herzog 1938).

=*Bazzania conchophylla* Herzog, *Rev. Bryol. Lichénol.* 11(1): 20, 1939 (Herzog 1938), syn. fide Fulford (1963a). Lectotype (Söderström and Hentschel 2023: 3): Costa Rica, Vicinity of Santa María de Dota, Provincia de San José, altitude 1,500–1,800 m, 14–26 Dec 1925, *Standley 41629* (JE-04001113 https://je.jacq.org/JE04001113, syn-lectotypes *Standley & Torres 50884*, JE-04001114 https://je.jacq.org/JE04001114, US-04675710 http://n2t.net/ark:/65665/3ad7b7e89-9740-4cd0-b3aa-755feef75a65).

≡*Bazzania chimborazensis* f. *cellulis-apicalibus* Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Cerro de La Carpintera, Prov. Cartago, 1,500–1,850 m, on tree, *Standley 35660* (JE, US-04665880 http://n2t.net/ark:/65665/31a04163f-a345-4cfc-8a62-6b4586bd9720). Note: The original material in US is named *Mastigobryum chimborazense* without forma with the later annotation "Probably *Bazzania asperistipula*. M. Fulford 1939."

=*Bazzania portoricensis* (Hampe et Gottsche) Steph. var. *pycnodictyon* Herzog, *Rev. Bryol. Lichénol.* 11(1): 19, 1939 (Herzog 1938), syn. with *Bazzania breuteliana* fide Fulford (1963a). Lectotype (Fulford 1963a: 133, supplemented by Söderström et al. 2023a: 150): Costa Rica, Heredia, El Muñeco, *Standley 50887* (US-04665905 http://n2t.net/ark:/65665/395ca296e-afa0-40b3-89df-ad8acc4127e6, isolectotype JE-04005948 https://je.jacq.org/JE04005948).

=*Bazzania longa* sensu Fulford [non (Nees) Trevis.]; see "Taxa Rejected from Central America" below.

GUATEMALA. S. loc. (Bonner 1963a as *Bazzania asperistipula*; Fulford 1967 also as *Bazzania schlimiana*, 1987 also as *Bazzania arcuata*; Fulford and Sharp 1990 also as *Bazzania arcuata*, *Bazzania breuteliana*, and *Bazzania schlimiana*). ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim (hb. Levier 5817)* (G-00067589 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=123767&lang=en, **TYPE** of *Mastigobryum asperistipulum*); Cobán, *Türckheim 5503*, ex hb. Levier 5582 (NY, **Fulford 1946** as *Bazzania asperistipula*, **1959b** as *Mastigobryum teretiusculum*; **Freire 2006** as *Mastigobryum teretiusculum*, **2009** as *Bazzania schlimiana*); Cobán, 1,600 m, *Türckheim 5582* (FH, **Fulford 1946** as *Bazzania asperistipula*; **Freire 2006** as *Bazzania schlimiana*); Cobán, 1,600 m, *Türckheim 5817* (NY, **Fulford 1946** as *Bazzania asperistipula*; **Freire 2006** as *Bazzania schlimiana*); Cobán, 1,600 m, *Türckheim* (G in hb. Levier 5817, **Fulford 1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Seler 2659* (G, **Fulford 1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*); S. loc., *Standley 90324* (F, **Fulford 1963a** as *Bazzania arcuata*; **Freire 2006** as *Bazzania arcuata*; **Pérez 2009** as *Bazzania arcuata*); S. loc., *Standley 90635* (F, **Fulford 1963a** as *Bazzania arcuata*; **Freire 2006** as *Bazzania arcuata*); S. loc., *Standley 91868* (F, **Fulford 1963a; Freire 2006**); S. loc., *Standley 92063i* (F, **Fulford 1963a; Freire 2006**); S. loc., *Türckheim* (G, **Stephani 1924** as *Mastigobryum asperistipulum*); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 351* (**Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**); Volcán Pacaya, *Standley 80537* (F, **Fulford 1963a** as *Bazzania breuteliana*; Freire 2006 as *Bazzania* cf. *breuteliana*; **Pérez 2009** as *Bazzania breuteliana*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 106*, *170*, *227*, *etc.* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Bazzania breuteliana*); Purhulhá municipio, en camino de tierra 4 mi (6.4 km) al NE de Purulhá, 1,500 m, 17 Jul 1977, *Croat 41304*, det. Whittemore (USCG, MO, Freire 2006 as *Bazzania* cf. *breuteliana*; Pérez 2009 as *Bazzania breuteliana*); S. loc., *Pérez 88* (USCG, Pérez 2009). EL PROGRESO: S. loc., *Sharp 2736a* (TENN, **Fulford 1959b** as *Bazzania schlimiana*; **Freire 2006** as *Bazzania schlimiana*; **Pérez 2009** as *Bazzania schlimiana*); S. loc., 1939, *Pagán* (**Morales 1991** as *Bazzania breuteliana*). HUEHUETENANGO: S. loc., *Steyermark 47192* (F, **Fulford 1963a**); S. loc., *Steyermark 48797* (F, **Fulford 1963a; Freire 2006**); S. loc., *Steyermark 49172* (F, **Freire 2006**); S. loc., *Steyermark 49949* (F, **Fulford 1963a** as *Bazzania arcuata*; **Freire 2006** as *Bazzania arcuata*; **Pérez 2009** as *Bazzania arcuata*); S. loc., *Steyermark 49955* (F, **Fulford 1963a** as *Bazzania arcuata*; **Freire 2006** as *Bazzania arcuata*); Sierra de Las Minas, *Steyermark 30002* (F, **Fulford 1963a; Freire 2006**); sierra Las Minas, *Pérez 1443* (USCG, Pérez 2009). QUICHÉ: Nebaj, 8,500 ft (2,591 m), *Sharp 2516* (TENN, **Fulford 1959b, 1963a; Freire 2006; Pérez 2009**); Nebaj, *Sharp 2529* (TENN, **Fulford 1959a, 1963a**, both as *Bazzania breuteliana*; Freire 2006 as *Bazzania* cf. *breuteliana*; **Pérez 2009** as *Bazzania breuteliana*); Nebaj, *Steyermark 38831* (F, **Fulford 1963a** as *Bazzania breuteliana*; Freire 2006 as *Bazzania* cf. *breuteliana*); Pitoreal, 24 Feb 1945, *Sharp 2771a* (TENN-B-0095795 https://bryophyteportal.org/portal/collections/individual/index.php?occid=4454068&

clid=0, **Fulford 1959b, 1963a; Freire 2006**). *ZACAPA: Between Loma El Picacho and Cerro de Monos, 2,000–2,600 m, *Steyermark 42819* (F-C0043916F http://bryophyteportal.org/portal/collections/individual/index.php?occid=3731165&clid=0, **this publication**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18837*, det. Dauphin May 2017 (MO-5232356! http://tropicos.org/specimen/90102265, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 19 Feb 1997, *Allen 18922*, det. Dauphin May 2017 (MO-5232339! http://tropicos.org/specimen/90102269, **this publication**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 20 Apr 1996, *Allen 17392*, det. Dauphin May 2017 (MO-6236053! http://tropicos.org/specimen/100366533, **this publication**); El Porvenir municipio, Pico Bonito National Park, upper slopes and summit, 15°37′N, 86°53′W, 23 Apr 1996, *Allen 17532*, det. Dauphin May 2017 (MO-6230301! http://tropicos.org/specimen/100366547, **this publication**). *COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 12 Mar 1993, *Allen 13893*, det. Dauphin May 2017 (MO-5224566! http://tropicos.org/specimen/90095310, **this publication**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, from Rio Cusuco to summit of Cerro Jilinco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 20 Mar 1993, *Allen 14282*, det. Dauphin May 2017 (MO-5224570! http://tropicos.org/specimen/90095317, **this publication**); San Pedro Sula municipio, from Rio Cusuco to Cerro Cantiles, 19 Mar 1993, *Allen 14236*, det. Dauphin May 2017 (MO-5224571! http://tropicos.org/specimen/90095316, **this publication**). *LEMPIRA: Gracias municipio, Celaque National Park, along Rio Arcagual, ~10.5 km S of Gracias, 14°35′N, 88°41′W, 15 Nov 1991, *Allen 11457B*, det. Dauphin May 2017 (MO-5224557! http://tropicos.org/specimen/90095302, **this publication**); Gracias municipio, Montaña de Celaque, ridge above Planta Electrica Statione, 14°33′N, 88°38′W, 1,400–1,870 m, 10 May 1992, *Allen 11904*, det. Gradstein Jun 2017 (MO-5224558! https://tropicos.org/specimen/90095303, PC, **this publication**); Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 12 May 1992, *Allen 11997*, det. Dauphin May 2017 (MO-5224559! http://tropicos.org/specimen/90095304, **this publication**); Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, trail to filo overlooking waterfall of Rio Arquecal, 14°33′N, 88°40′W, 16 May 1992, *Allen 12213*, det. Dauphin May 2017 (MO-5224561! http://tropicos.org/specimen/90095306, **this publication**). *OCOTEPEQUE: La Labor municipio, Montana del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 24 Mar 1993, *Allen 14519*, det. Dauphin May 2017 (MO-5224572! http://tropicos.org/specimen/90095319, **this publication**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 31 Jul 1977, *Croat 42463*, det. Dauphin May 2017 (MO-5228831! http://tropicos.org/specimen/100990950, **this publication**); Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 31 Jul 1977, *Croat 42464*, det. Dauphin May 2017 (MO-5228827! http://tropicos.org/specimen/100990949, **this publication**); Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 31 Jul 1977, *Croat 42467*, det. Dauphin May 2017 (MO-5228828! http://tropicos.org/specimen/100990951, **this publication**).

***NICARAGUA.** *JINOTEGA: Bocay municipio, Reserva Natural Kilambé, 12–19 Jan 2001, *Rueda et al. 15760*, det. Dauphin May 2017 (MO-5267726! http://tropicos.org/specimen/90189995, **this publication**). *RÍO SAN JUAN: San Juan del Norte municipio, Reserva Indio-Maíz, Cerro El Gigante, 10°46′N, 83°53′W, 25 Jul 1996, *Rueda et al. 4510*, det. Dauphin May 2017 (MO-6231459! http://tropicos.org/specimen/100318335, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Bazzania arcuata*; **Holz and Gradstein 2005b** also as *Bazzania arcuata*); Cordillera de Talamanca, *Kappelle 608* (CR, **Kappelle 1996**); S. loc. (Stephani 1909b as *Mastigobryum arcuatum*; Pagán 1939c, 1942b, both as *Bazzania portoricensis*; Jovet-Ast 1957 as *Bazzania breuteliana*, *Bazzania teretiuscula*, and *Bazzania teretiuscula*, 1960 as *Bazzania breuteliana*; Fulford 1959a as *Bazzania chimborazensis*, 1959b as *Bazzania teretiuscula*, 1967 also as *Bazzania schlimiana* and *Bazzania teretiuscula*, 1987 also as *Bazzania arcuata*; Bonner 1963a as *Bazzania asperistipula*; Cole 1982, 1983, both also as *Bazzania arcuata*, *Bazzania breuteliana*, *Bazzania schlimiana*, and *Bazzania teretiuscula*; Fulford and Sharp 1990 also as *Bazzania arcuata*, *Bazzania breuteliana*, *Bazzania schlimiana*, and *Bazzania teretiuscula*; Lemos-Michel and Bueno 1992 as *Bazzania chimborazensis*; Gradstein 1999a as *Bazzania arcuata*; Dauphin 2005 as *Bazzania arcuata*; Gradstein and Holz 2005 as *Bazzania arcuata*); S. loc., *Tonduz* (**Stephani 1909b** as *Mastigobryum portoricense*). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Bazzania breuteliana*); Poás Volcano, Aug 1977, *Griffin et al. 13* (USJ, FLAS-020493, **Morales and Griffin 1983** as *Bazzania arcuata*; **Morales 1991** as *Bazzania arcuata*; **Dauphin 2005** as *Bazzania arcuata*); Poás Volcano, Aug 1977, *Griffin et al. 156* (USJ, FLAS-020449, **Morales and Griffin 1983** as *Bazzania breuteliana*; **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); San Ramón cantón, Los Ángeles, *Brenes 16264*, *17121*, *19018* (F, **Fulford 1959b, 1963a; Morales 1991; Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Bazzania breuteliana* and *Bazzania schlimiana*); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Lucas* (UC-2053924, **Norris et al. 2017**); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, Jul 2007, *Norris 110039* (UC-2053698, **Norris et al. 2017** as *Bazzania breuteliana*); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, Jul 2007, *Norris 110534* (UC-2053321, **Norris et al. 2017** as *Bazzania*

breuteliana); San Ramón cantón, Nectandra, 3 Nov 2010, *Norris 109985* (UC, **Norris et al. 2017** as *Bazzania schlimiana*); Sarchi cantón, Valverde Vega, *Alfaro 7* (F, **Fulford 1959b, 1963a**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Alto de La Estrella, *Standley 39106* (US, W, **Herzog 1938** as *Bazzania portoricensis* var. *pycnodictyon*; **Fulford 1946** as *Bazzania asperistipula* and *Bazzania breuteliana*, **1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania breuteliana* and *Bazzania schlimiana*; **Bonner 1963a** as *Bazzania portoricensis* var. *pycnodictyon*; **Morales 1991** as *Bazzania breuteliana* and *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania breuteliana* and *Bazzania schlimiana*); Alto de La Estrella, *Standley 39117*, *39403*, *50887*, *51338* (US, W, **Herzog 1938** as *Bazzania portoricensis* var. *pycnodictyon*; **Fulford 1946** as *Bazzania breuteliana*, **1963a** as *Bazzania breuteliana*; **Bonner 1963a** as *Bazzania portoricensis* var. *pycnodictyon*; **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); Alvarado cantón, Coliblanco, 1,950 m, *Maxon 237* (NY, **Fulford 1946** as *Bazzania asperistipula*, **1959b** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania schlimiana*); Alvarado cantón, Coliblanco, 1,950 m, *Maxon* (NY, **Fulford 1963a** as *Bazzania schlimiana*); Cartago cantón, El Muñeco, 1,400–1,500 m, *Standley 50887* (US, W, **TYPE** of *Bazzania portoricensis* var. *pycnodictyon*, **Herzog 1938** as *Bazzania portoricensis* var. *pycnodictyon*; **Bonner 1963a** as *Bazzania portoricensis* var. *pycnodictyon*; **Fulford 1963a** as *Bazzania breuteliana*; **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 50884* (US, JE-04001114 https://je.jacq.org/JE04001114, **TYPE** of *Bazzania conchophylla*, **Herzog 1938** as *Bazzania conchophylla*; **Fulford 1946, 1963a,** both as *Bazzania teretiuscula*; **Bonner 1963a** as *Bazzania conchophylla*; **Morales 1991** as *Bazzania teretiuscula*; **Dauphin 2005** as *Bazzania teretiuscula*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 50885* (**Herzog 1938** as *Bazzania arcuata*; **Fulford 1959a** as *Bazzania arcuata*; **Morales 1991** as *Bazzania arcuata*; **Dauphin 2005** as *Bazzania arcuata*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 51338* (US, W, **TYPE** of *Bazzania portoricensis* var. *pycnodictyon*, **Herzog 1938** as *Bazzania portoricensis* var. *pycnodictyon*; **Fulford 1946** as *Bazzania asperistipula*, **1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania breuteliana* and *Bazzania schlimiana*; **Bonner 1963a** as *Bazzania portoricensis* var. *pycnodictyon*; **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania breuteliana* and *Bazzania schlimiana*); El Guarco cantón, Santa Clara, 1,950 m, *Maxon & Harvey 8188* (hb. Herzog, **Fulford 1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania schlimiana*); El Guarco cantón, Santa Clara, *Torres 219*, *220-1* (F, **Fulford 1963a** as *Bazzania breuteliana*; **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania schlimiana*); El Guarco cantón, Tobosi (**Morales 1991** as *Bazzania arcuata*); El Guarco cantón, Tobosi, 2,200 m, 25 Jan 1882, *Lehmann 1133* (**Stephani 1894a** as *Bazzania arcuate*; **Dauphin 2005** as *Bazzania arcuata*); Jiménez cantón, Rio Naranjo, *Tonduz 15621* (G, **Fulford 1959a** as *Bazzania breuteliana*); La Estrella, *Standley 39426* (W, US, **Herzog 1938** as *Bazzania heteroclada*; **Fulford 1946** as *Bazzania teretiuscula*, **1963a** as *Bazzania teretiuscula*; **Morales 1991** as *Bazzania teretiuscula*; **Dauphin 2005** as *Bazzania teretiuscula*); La Union cantón, Cerro de La Carpintera, 1,500–1,850 m, *Standley 35630*, *35632*, *35660* (US, W, **Herzog 1938** as *Bazzania asperistipula* and *Bazzania chimborazensis* f. *cellulis-apicalibus*; **Fulford 1946** as *Bazzania asperistipula*, **1959b** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania chimborazensis*; **Dauphin 2005** as *Bazzania schlimiana* and *Bazzania chimborazensis*); Oreamuno cantón, Irazú National Park, 16 Nov 1999, *Holz CR 99-357*, det. Dauphin Nov 2020 (CR!, **this publication**); Paraíso cantón, Orosi, *Standley 39650* (US, W, **Fulford 1946** as *Bazzania asperistipula*, **1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania schlimiana*); Paraíso cantón, Orosi, Tapantí National Park, *Griffin et al. 178* (USJ, **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Eakin 223* (FLAS, **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania schlimiana*). GUANACASTE: Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, 28 Oct 1990, *Chavez 2782b*, det. Dauphin May 2017 (MO-5280474!, **this publication**); Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, 1,100 m, 28 Oct 1990, *Chavez 279a*, det. Dauphin May 2017 (MO-5280457! https://tropicos.org/specimen/90136124, **this publication**); Liberia cantón, Rincón de La Vieja National Park, Sector Las Pailas, sendero al cráter, *Dauphin et al. 1855* (CR, **Freire 2006** as *Mastigobryum braunianum*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva (Dauphin 2005 as *Bazzania breuteliana*); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Griffin et al. D210* (USJ, **Morales 1991** as *Bazzania breuteliana*); Heredia cantón, Vara Blanca, 1,600–1,700 m, *Maxon & Harvey 8266* (hb. Herzog, **Fulford 1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania schlimiana*; **Dauphin 2005** as *Bazzania schlimiana*); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52164a* (hb. Herzog, **Fulford 1959b** as *Bazzania schlimiana*, **1963a** as *Bazzania schlimiana*; **Morales 1991** as *Bazzania schlimiana*). PUNTARENAS: Buenos Aires cantón, Monte Hacum, *Tonduz* (G, **Fulford 1959a, 1963a,** both as *Bazzania arcuata*; **Morales 1991** as *Bazzania arcuata*; **Dauphin 2005** as *Bazzania arcuata*); Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1373*, *1433* (CR, **Dauphin 2005** also as *Bazzania arcuata*); Jiménez cantón, Rio Naranjo, 15 Mar 1971, *James*, det. Timme (MO-616896!, **this publication**); Monteverde, <1,500 m (Morales 1991 also as *Bazzania breuteliana*; Dauphin 2005 also as *Bazzania breuteliana*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** also as *Bazzania breuteliana*); Monteverde cantón, Santa Elena Biological Preserve, 10°15′N, 84°45′W, 4 Aug 1993, *Timme 11339*, det. Timme (MO-6690004!

https://tropicos.org/specimen/100861277, **this publication**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Bazzania breuteliana*); Monteverde, 29 Dec 1964, *James, J. 27* (R, **Reed and Robinson 1971** as *Bazzania breuteliana*); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-28*, *1969-32* (US, **Reed and Robinson 1971**; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Alto de Pito, *Tonduz 3009* (G, **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Marcos, Alto de Pito, 1,400 m, *Tonduz 11618* (NY, G, **Fulford 1946**, **1963a**, both as *Bazzania breuteliana*; **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); Dota cantón, San Marcos, Alto de Pito, 1,400 m, *Tonduz 3009* (G, **Fulford 1959a**, **1963a**, both as *Bazzania breuteliana*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41629* (US, **TYPE** of *Bazzania conchophylla*, **Herzog 1938** as *Bazzania conchophylla*; **Fulford 1946**, **1963a**, both as *Bazzania teretiuscula*; **Bonner 1963a** as *Bazzania conchophylla*; **Morales 1991** as *Bazzania teretiuscula*; **Kappelle 1996** as *Bazzania teretiuscula*; **Dauphin 2005** as *Bazzania teretiuscula*); Moravia cantón, La Hondura, *Griffin & Morales A53* (USJ, **Morales 1991** as *Bazzania breuteliana*; **Dauphin 2005** as *Bazzania breuteliana*); Moravia cantón, Zurquí, 2,000–2,500 m, *Standley 48258* (**Herzog 1938** as *Bazzania heteroclada*; **Morales 1991** as *Bazzania teretiuscula*; **Dauphin 2005** as *Bazzania teretiuscula*).

PANAMA. S. loc. (Jovet-Ast 1957, 1960, both as *Bazzania breuteliana*; **Gradstein 1993**; Stotler et al. 1998 as *Bazzania breuteliana*). CHIRIQUÍ: Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 757* (PMA, **Stotler et al. 1998** as *Bazzania teretiuscula*); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna, NW of camping site, 1,000–1,200 m, *Salazar Allen et al. 628* (PMA, **Stotler et al. 1998** as *Bazzania teretiuscula*; **Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Spörle 1.18* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Gualaca distrito, Valle de la Sierpe along Quebrada Bonita heading SE, *Salazar Allen et al. 5079* (PMA, **Stotler et al. 1998**); Renacimiento distrito, Cerro Pando, on the Costa Rican border 16 km NW of El Hato del Volcán, 2,000–2,482 m, *Mori & Bolten 7316* (MO, PMA, **Stotler et al. 1998** as *Bazzania arcuata*); S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Bazzania breuteliana*; **Stotler et al. 1998** as *Bazzania breuteliana*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34197* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34249* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (**Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** incl. *Bazzania robusta*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** incl. *Bazzania robusta*); S. loc. (Schäfer-Verwimp 2014); Summit of Pirre Massif, 1,200–1,350 m, *Allen 8864* (MO, **Stotler et al. 1998** as *Bazzania arcuata*). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850–1,000 m, *Salazar Allen et al. 9447* (PMA, **Stotler et al. 1998**); Capira distrito, Cerro Campana, *Stimson 5407* (MO, **Stotler et al. 1998** as *Bazzania arcuata*). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998 as *Bazzania breuteliana*); Panamá distrito, Cerro Jefe, ~1,000 m, *Salazar Allen et al. 9447* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, 12 Jun 1991, *Salazar Allen & Gradstein 9397*, det. Gradstein 1992 (MO-3955638! https://tropicos.org/specimen/90099055, **this publication**); Panamá distrito, Cerro Jefe, forest behind the INTEL tower, 900–1,000 m, *Spörle* (PMA, Spörle 1990 as *Bazzania* cf. *breuteliana*); Panamá distrito, Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9302* (PMA, **Stotler et al. 1998** as *Bazzania breuteliana*); S. loc. (Schäfer-Verwimp 2014).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, *Dauphin 974*, det. G. Dauphin Oct 2020 (USJ-47259!, CR!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 22 Jan 1994, *Dauphin 974 p.p.*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 970* (USJ!, **Dauphin 1999**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 974* (USJ!, **Dauphin 1999**); Sendero a Cerro Yglesias, 5°31′50.13″N, 87°03′57.05″W, 345 m, 26 Jun 2012, *Estrada et al. 5871*, det. G. Dauphin Aug 2016 (CR-281368!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Bazzania jamaicensis (Lehm. et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877).

≡*Herpetium jamaicense* Lehm. et Lindenb., *Nov. Stirp. Pug.* 7: 7, 1838 (Lehmann 1838). Type: Jamaica.

≡*Mastigobryum jamaicense* (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 223, 1845 (Gottsche et al. 1845b).

=*Mastigobryum fendleri* Steph., *Bull. Herb. Boissier*, sér. 2, 8(10): 75 [=*Sp. Hepat. (Stephani)* 3: 436], 1908 (Stephani 1908d), syn. fide Gradstein and Costa (2003). Type: Venezuela.

≡*Bazzania fendleri* (Steph.) Fulford., *Annal. Cryptog. Phytopathol.* 3: 105, 1946 (Fulford 1946).

=*Bazzania jamaicensis* (Lehm. et Lindenb.) Trevis. var. *chamaecardia* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 19, 1939 (Herzog 1938), syn. fide Fulford

(1963a). Lectotype (Fulford 1963a: 144): Costa Rica, Heredia, Cerro de las Lajas, 11 Mar 1926, *Standley & Valerio 52267* (US-04666041 http://n2t.net/ark:/65665/346b8e9d7-2f93-48b8-998b-6b629f3e78b5, isolectotype JE-04005948 https://je.jacq.org/JE04005948).

HONDURAS. FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, *Rodrigues 762* (F, **Fulford 1963a**).

NICARAGUA. Segovia, 4,000 ft (1,219 m), *Oersted* (G, F, **Hampe 1851b** as *Mastigobryum jamaicense*; **Fulford 1946, 1959a, 1963a; Morales 1991**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Arnell 1956b; Jovet-Ast 1959; Cole 1982, 1983; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); S. loc., *Brade* (G, **Fulford 1963a; Morales 1991**); S. loc., *Lücking* (**Bernecker 1990**); S. loc., *Oersted* (YU, G, S, **Stephani 1909b** as *Mastigobryum jamaicense*). ALAJUELA: Poás National Park, *Griffin & Araya 65* (FLAS, USJ, **Morales 1991; Dauphin 2005**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 109950* (**Norris et al. 2017** as *Bazzania fendleri*). HEREDIA: Barva cantón, Volcán Barva, *Morales 1501* (USJ, **Morales 1991**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52117*, *52267* (**Herzog 1938** as *Bazzania jamaicensis* var. *chamaecardia*; **Bonner 1963a** as *Bazzania jamaicensis* var. *chamaecardia*; **Morales 1991; Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, *Standley & Valerio 49949*, *50713*, *51446*, *51643a*, *52117* (US, W, **Fulford 1946, 1963a; Morales 1991**); San Isidro cantón, Cerro de Las Lajas, *Standley & Valerio 51645* (US, W, **TYPE** of *Bazzania jamaicensis* var. *chamaecardia*, **Fulford 1946, 1963a; Morales 1991**); San Isidro cantón, Cerro de Las Lajas, *Standley & Valerio 52267* (US, W, **Fulford 1946, 1963a; Morales 1991**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51446* (B-18972, **Dauphin 2005; Herzog 1938**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 50713*, *51643a*, *51645* (B-18971, **Herzog 1938** as *Bazzania jamaicensis* var. *chamaecardia*; **Bonner 1963a** as *Bazzania jamaicensis* var. *chamaecardia*; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania longistipula (Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877).

≡*Mastigobryum longistipulum* Lindenb., *Syn. Hepat.* 2: 228, 1845 (Gottsche et al. 1845b). Type: St. Vincent.

GUATEMALA. Pitoreal, *Sharp 2772* (TENN, **Fulford 1959a, 1963a; Freire 2006**); S. loc. (Fulford 1987; Fulford and Sharp 1990). ALTA VERAPAZ: S. loc., *Standley 90648* (F, **Fulford 1963a; Freire 2006; Pérez 2009**).

***HONDURAS.** *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 18 Mar 1993, *Allen 14133*, det. Dauphin May 2017 (MO-5224574! http://tropicos.org/specimen/90095314, **this publication**); San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 19 Mar 1993, *Allen 14210*, det. Dauphin May 2017 (MO-5224569! http://tropicos.org/specimen/90095315, **this publication**). *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 12 May 1992, *Allen 11997B*, det. Dauphin May 2017 (MO-5224560! http://tropicos.org/specimen/90095305, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc., *Kappelle 4622a* (U, **Kappelle 1996**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Griffin et al. D187* (FLAS, USJ, **Morales 1991; Dauphin 2005**). PUNTARENAS: Golfito, *Chavarría 502* (CR, NY, **Dauphin 2005**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. PANAMA: Panamá distrito, Cerro Jefe, creek on lateral road to INTEL tower, 900 m, *Salazar Allen & Gradstein 9416* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Bazzania nitida (F.Weber) Grolle, *Rev. Bryol. Lichénol.* 29(3/4): 210, 1961 (Grolle 1960b).

≡*Jungermannia nitida* F.Weber, *Hist. Musc. Hepat. Prodr.*: 43, 1815 (Weber 1815). Type: S. Africa [based on *Jungermannia convexa* Thunb. 1800, *Prodr. Pl. Cap.* 2: 173, nom. illeg. (ICN2018 Art. 53.1; hom. illeg. non Scop. 1772).

=*Mastigobryum heterostipum* Steph., *Sp. Hepat. (Stephani)* 3: 532, 1909 (Stephani 1909b), syn. fide Gradstein (2017a). Type: "America tropica et subtropica."

≡*Bazzania heterostipa* (Steph.) Fulford, *Bull. Torrey Bot. Club* 86(6): 410, 1959 (Fulford 1959b).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 151* (USCG, Pérez 2009 as *Bazzania heterostipa*); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Bazzania* cf. *heterostipa*). ?EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Bazzania* aff. *heterostipa*). Note: We are not aware of any positively identified specimen from El Progreso. ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Bazzania heterostipa* and *Bazzania* aff. *heterostipa*).

PANAMA. DARIÉN: Summit of Pirre Massif, 800–1,350 m, *Allen 8898* (MO http://tropicos.org/specimen/101105657, **Stotler et al. 1998** as *Bazzania heterostipa*).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Indo-China(?), Malesia(?), Papuasia(?), Australia, New Zealand, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Bazzania pallidevirens (Steph.) Fulford, *Ann. Cryptog. Phytopathol.* 3: 42, 1946 (Fulford 1946).

≡*Mastigobryum pallidevirens* Steph., *Bull. Herb. Boissier*, sér. 2, 8(11): 849 [=*Sp. Hepat. (Stephani)* 3: 473], 1908 (Stephani 1908h). Type: Brazil.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Bazzania* cf. *pallidevirens*). Note: We are not aware of any positively identified specimen from Alta Verapaz. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Northern South America, Western South America, Brazil.

Bazzania phyllobola Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 372, 1885 (Spruce 1885). Type: Peru.

COSTA RICA. CARTAGO: Paraíso cantón, Tapanti National Park, *Lücking 4* (USJ, **Morales 1991**). SAN JOSÉ: Barva cantón, Volcán Barva, *Standley 48258* (**Morales 1991**); Moravia cantón, Zurquí, 2,000–2,500 m, *Standley 48091* (US, B-19003, **Herzog 1938**; Fulford 1946, rejecting it as *Bazzania gracilis*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34586* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America, Brazil.

Bazzania pycnophylla* var. *cubensis (Gottsche ex Steph.) Pócs, *Nova Hedwigia Beih.* 150: 164, 2020 (Pócs 2020).

≡*Mastigobryum cubense* Gottsche ex Steph., *Hedwigia* 24(6): 248, 1885 (Stephani 1885b). Type: Cuba.

≡*Bazzania cubensis* (Gottsche ex Steph.) Pagán, *Bryologist* 42(2): 38, 1939 (Pagán 1939c).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo del Quetzal, 18 Aug 2004, *Pérez 571* (MO-6233916! http://tropicos.org/specimen/100311958, **this publication**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Bazzania cubensis*); S. loc., *Freire 623* (USCG, Pérez 2009 as *Bazzania cubensis*).

***HONDURAS.** *COMAYAGUA: From Agua Amarilla to San José de Los Planes, ~11–15 km from Lake Yojoa, 14°47′N, 87°51′W, 1,300–1,700 m, 14 Mar 1993, *Allen 14029*, det. Dauphin May 2017 (MO-5224568! http://tropicos.org/specimen/90095312, **this publication** as *Bazzania cubensis*).

†**COCOS I.** Dauphin 1999, 2005 both as *Bazzania cubensis*. Note: The reports belong to *Bazzania gracilis*.

Also reported from the Caribbean, Northern South America, Western South America.

Bazzania pycnophylla (Taylor) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877) var. ***pycnophylla***.

≡*Mastigobryum pycnophyllum* Taylor, *London J. Bot. 5*: 371, 1846 (Taylor 1846a). Type: Jamaica.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 304* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 477* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Western South America.

Bazzania roraimensis (Steph.) Fulford, *Ann. Cryptog. Phytopathol.* 3: 27, 1946 (Fulford 1946).

≡*Mastigobryum roraimense* Steph., *Trans. Linn. Soc. London, Bot.* 6(1): 97, 1901 (Stephani 1901e). Type: Guyana.

COSTA RICA. GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, Cerro Orosilito, *Dauphin 1884* (CR, **Dauphin 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, 700–1,400 m, *James, W. 1969-32* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-29* (R, MO-6168532, **Reed and Robinson 1971**).

PANAMA. NASO TJËR DI COMARCA: Cerro Fábrega, 12 Aug 2003, *De Gracia 246* (PMA, **Dauphin 2007**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Bazzania spruceana Steph., *Hedwigia* 32(4): 213, 1893 (Stephani 1893b). Type: Peru.

PANAMA. PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, 900–1,000 m, *Salazar Allen et al. 5201* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Spörle 5201* (PMA, **Spörle 1990**).

Also reported from Northern South America, Western South America, Brazil.

Bazzania stolonifera (Sw.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877) var. ***stolonifera***.

≡*Jungermannia stolonifera* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

≡*Mastigobryum stoloniferum* (Sw.) Lindenb., *Syn. Hepat.* 2: 227, 1845 (Gottsche et al. 1845b).

=*Mastigobryum liebmanianum* Lindenb. et Gottsche, *Syn. Hepat. 5*: 719, 1847 (Gottsche et al. 1847), syn. fide Gradstein (2017a). Type: Mexico.

≡*Bazzania liebmaniana* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4: 414, 1877 (Trevisan 1877).

=*Mastigobryum turkheimii* Beauverd, *Sp. Hepat. (Stephani)* 6: 481, 1924 (Stephani 1924), syn. fide Fulford (1963a). Lectotype (Fulford 1963a: 124) or possibly holotype: Guatemala, Cobán, Mar 1908, *Türckheim* (G-00113734 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=299552&lang=en).

≡*Mastigobryum sylvaticum* Steph., *Sp. Hepat. (Stephani)* 3: 691, 1924 (Stephani 1924), nom. illeg. (ICN2018 Art. 34.1(d); publ. in syn. [sub *Mastigobryum turkheimii*]).

=*Bazzania vincentiana* (Lehm. et Lindenb.) Trevis. f. *rufescens* Herzog, *Rev. Bryol. Lichénol.* 11(1): 19, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Fulford (1963a). Original material: Costa Rica, Cerro de Las Lajas, Provincia de Heredia, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51612* (US-04666387 http://n2t.net/ark:/65665/3abcd26fb-df4b-4207-8371-6fa80480f258, W fide Fulford 1946).

≡*Bazzania stolonifera* f. *rufescens* Fulford, *Ann. Cryptog. Phytopathol.* 3: 51, 1946 (Fulford 1946), nom. inval. (ICN2018 Art. 38.1(a); no description).

=*Bazzania vincentiana* (Lehm. et Lindenb.) Trevis. f. *defolians* Herzog, *Rev. Bryol. Lichénol.* 11(1): 19, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Fulford (1946). Original material: Costa Rica, Yerba Buena, northeast of San Isidro, Provincia de Heredia, altitude about 2,000 m, 22–28 Feb 1926, *Paul C. Standley & Juvenal Valerio 49869* (US-04666390 http://n2t.net/ark:/65665/398704b86-079a-4aa5-85bc-b41f18d4a326).

≡*Bazzania stolonifera* f. *defolians* Fulford, *Ann. Cryptog. Phytopathol.* 3: 51, 1946 (Fulford 1946), nom. inval. (ICN2018 Art. 38.1(a); no description).

=*Bazzania vincentiana* (Lehm. et Lindenb.) Trevis. f. *minor-ramulosa* Herzog, *Rev. Bryol. Lichénol.* 11(1): 19, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Fulford (1946). Original material: Costa Rica, Yerba Buena, northeast of San Isidro, Provincia de Heredia, altitude about 2,000 m, 22–28 Feb 1926, *Paul C. Standley & Juvenal Valerio 49891* (US-04666393 http://n2t.net/ark:/65665/307ca380d-bf00-44dc-9779-fabf1080f6e8).

≡*Bazzania stolonifera* f. *minor* Fulford, *Ann. Cryptog. Phytopathol.* 3: 51, 1946 (Fulford 1946), nom. inval. (ICN2018 Art. 38.1(a); no description).

≡*Bazzania stolonifera* f. *ramulosa* Fulford, *Ann. Cryptog. Phytopathol.* 3: 51, 1946 (Fulford 1946), nom. inval. (ICN2018 Art. 38.1(a); no description).

GUATEMALA. S. loc. (**Fulford 1946**; Jovet-Ast 1957 as *Bazzania liebmaniana*; Fulford 1959a, 1959b as *Bazzania liebmaniana*; Winkler 1967 as *Bazzania liebmaniana*; Miller et al. 1983; **Geissler and Bischler 1985** as *Mastigobryum sylvaticum* and *Mastigobryum turkheimii*; Fulford and Sharp 1990 as *Bazzania* '*liebmanniana*'; Oliveira-e-Silva and Yano 2000); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1924** as *Mastigobryum turkheimii*). ALTA VERAPAZ: Cobán, *Standley 69119* (US, W, **Fulford 1946, 1963a**, both as *Bazzania liebmaniana*; **Freire 2006** as *Bazzania* '*liebmanniana*'; **Pérez 2009** as *Bazzania* '*liebmanniana*'); Cobán, *Türckheim 5418* (FH, **Fulford 1946, 1963a** as *Mastigobryum quelchii*; **Freire 2006** as *Mastigobryum quelchii*); Cobán, 1,600 m, *Türckheim 5582* (FH, **Fulford 1946, 1963a** as *Mastigobryum viridissimum*; **Freire 2006** as *Mastigobryum viridissimum*); Cobán, Mar 1908, *Türckheim 5816* (G-00113734 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=299552&lang=en, **TYPE** of *Mastigobryum turkheimii*, **Fulford 1946, 1963a**; **Freire 2006**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Standley 91431* (F, **Freire 2006**); S. loc., *Steyermark 91431* (F, **Fulford 1963a**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 393* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo del Quetzal, 11 Sep 2004, *Pérez*, det. Pérez 2004 (MO-6233915! https://tropicos.org/specimen/100311957, **this publication**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 150, 244, etc.* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); S. loc., *Pérez 56* (USCG, Pérez 2009). CHIQUIMULA: S. loc., *Steyermark 31011* (F, **Fulford 1963a**). EL PROGRESO: Brushik, 300 m, *Pittier* (G, **Fulford 1963a; Morales 1991**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUICHÉ: S. loc., *Pérez 2213* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**); S. loc., *Steyermark 29966* (F, **Fulford 1963a**); S. loc., *Steyermark 51681* (F, **Fulford 1963a; Freire 2006; Pérez 2009**).

BELIZE. S. loc. (Fulford 1959a). CAYO: S. loc., Dec 1993, *Allen 15052, 15108, etc.* (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., Dec 1993, *Allen 15360, 15460* (BRH, MO, **Whittemore and Allen 1996**). Note: The report of *Bazzania stolonifera* from Belize in Fulford (1963a as "British Honduras") is erroneous. The specimens were collected in Honduras (cf. Whittemore and Allen 1996).

HONDURAS. S. loc. (Fulford 1959a; Miller et al. 1983; Oliveira-e-Silva and Yano 2000). COMAYAGUA: El Plan along ridge to Cerro El Maneadero, ~11 km E of Lake Yojoa, 14°48′N, 88°52′W, 1,800–1,900 m, 11 Mar 1993, *Allen 13826*, det. Dauphin May 2017 (MO-5224564! https://tropicos.org/specimen/90095309, **this publication**); San Juanillo, Cordillera de Montecillos, trail between San Juanillo and La Danta, 14°30′N, 87°52′W, 1,800–1,900 m, 7 Nov 1991, *Allen 11089*, det. Dauphin May 2017 (MO-5224556! https://tropicos.org/specimen/90095301, **this publication**); Siguatepeque municipio, El Achote, *Yuncker 6613* (DPU, **Fulford 1959a, 1963a**); Siguatepeque, 1,800 m, *Yuncker et al. 6617, 6618* (FH, **Fulford 1946, 1963a; Whittemore and Allen 1996**). *OLANCHO: Catacamas municipio, Sierra de Algalta, La Chorrera, 15 km NNW of Catacamas, 14°59′N, 85°56′W, 30 May 1992, *Allen 12611*, det. Dauphin May 2017 (MO-5224563! https://tropicos.org/specimen/101213015, **this publication**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/5/5* (**Winkler 1967** as *Bazzania* '*liebmanniana*').

NICARAGUA. Segovia, 4,000 ft (1,219 m), *Oersted* (G, F, **Hampe 1851b** as *Mastigobryum stoloniferum*; **Müller 1851** as *Mastigobryum stoloniferum*). ?NUEVA SEGOVIA: Ocotal, *Oersted* (Fulford 1946). Note: Fulford is probably referring to Oersted's specimen from "Segovia," which at that time was a much larger geographic region. It is thus not confirmed to be found in the current province of Nueva Segovia.

COSTA RICA. Brushik(?), 300 m, *Pittier* (G, **Fulford 1959a**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Cole 1982, 1983; Miller et al. 1983). CARTAGO: Alto de La Estrella, *Standley 39101*, *39426* (F, W, US, **Herzog 1938** as *Bazzania* '*vincentina*'; **Fulford 1946, 1963a; Morales 1991** also as *Bazzania liebmaniana*; **Dauphin 2005** also as *Bazzania liebmaniana*); Paraíso cantón, Orosi, *Standley 39650* (US, W, **Herzog 1938** as *Bazzania* '*liebmanniana*'; **Morales 1991** as *Bazzania liebmaniana*; **Dauphin 2005** as *Bazzania liebmaniana*); Paraíso cantón, Tapanti National Park, *Lücking 3* (USJ, **Dauphin 2005** as *Bazzania liebmaniana*); S. loc., *Maxon 502* (NY, **Fulford 1946, 1963a; Morales 1991**). GUANACASTE: Tenorio Volcano (**Dauphin 2005**); Tenorio Volcano, *Garcia & Morales 1859* (USJ, **Morales 1991**). HEREDIA: San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51612* (US, W, NY, **TYPE** of *Bazzania vincentiana* f. *rufescens*, **Herzog 1938** as *Bazzania* '*vincentina*' f. *rufescens*; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49842* (US, W, **Herzog 1938** as *Bazzania vincentiana* '*vincentina*'; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49869* (US, W, **TYPE** of *Bazzania vincentiana* f. *defolians*, **Herzog 1938** as *Bazzania* '*vincentina*' f. *defolians*; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49882* (US, W, **Herzog 1938** as *Bazzania* '*vincentina*'; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49891* (US, W, **TYPE** of *Bazzania vincentiana* f. *ramulosa*, **Herzog 1938** as *Bazzania* 'vincentina' f. *ramulosa*; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49949* (US, W, **Herzog 1938** as *Bazzania* '*vincentina*'; **Fulford 1946, 1963a; Morales 1991; Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1364* (CR, **Dauphin 2005**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James, W. 23954* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-08*, det. Robinson (R, MO-6168531, **Reed and Robinson 1971**); Monteverde, Feb 1969, *James, W. 1969-25* (MO-6168524!, **this publication**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-28* (R, **Reed and Robinson 1971; Dauphin 2005**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Laguna de La Chonta, 2,000–2,100 m, *Standley 42240* (US, W, **Herzog 1938** as *Bazzania* '*vincentina*'; **Fulford 1946, 1963a; Morales 1991; Kappelle 1996; Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, Santa María, *Standley 41629* (W, US, **Morales 1991** as *Bazzania liebmaniana*; **Dauphin 2005** as *Bazzania liebmaniana*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Miller et al. 1983). CHIRIQUÍ: Boquete distrito, Holcomb Trail, *Cornman 3139*, *3158* (MO, **Fulford 1959a, 1963a; Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Spörle 1.18.2* (PMA, **Stotler et al. 1998**); Renacimiento distrito, Cerro Pando on the Continental Divide, 2,000–2,482 m, *Mori & Bolten 7313* (MO, PMA, **Stotler et al. 1998**); S. loc., *Cornman* (MO, **Fulford 1959a, 1963a**). COCLÉ: La Pintada distrito, El Potroso sawmill at Continental Divide, 1,200–1,300 m, *Sytsma 1789* (MO, PMA, **Stotler et al. 1998**). DARIÉN: Cerro Pirre, *Salazar Allen & Gradstein 9303* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Serranía del Pirre, *Croat 37853* (MO, **Stotler et al. 1998**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 275* (PMA, **Dauphin 2007**). NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, *Croat 33223* (MO, **Stotler et al. 1998**). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998), *Knapp 3514* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Lewis & Dressler 7606* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, 900–1,000 m, *Salazar Allen et al. 5236* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind the INTEL tower, 900–1,000 m, *Spörle* (PMA, **Spörle 1990**). VERAGUAS: Santa Fe distrito, Slopes of Cerro Tute, 1,200–1,400 m, *Gentry 6272B* (MO, PMA, **Stotler et al. 1998**).

COCOS I. Above Wafer, 160 m, 15 Feb 1994, *Dauphin 1063 p.p.*, det. A. Bernecker (USJ, **Gradstein et al. 1994**); Cerro Pelón, 5°32′57″N, 87°03′56″W, *Dauphin 1146 p.p.*, det. G. Dauphin Nov 2020 (CR!, **this publication**); Cerro Pelón, 5°32′57″N, 87°03′56″W, 400 m, 9 Feb 1994, *Dauphin 1146 p.p.*, det. G. Dauphin Nov 2020 (CR!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 160 m, 25 Jan 1990, *Dauphin 1063*, det. A. Bernecker 1994 (USJ-108888!, CR-4468439!, W!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 160 m, 14 Feb 1994, *Dauphin 1063* (USJ, **Dauphin 1995, 1999**); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 29 Jan 1990, *Dauphin 1105*, det. A. Bernecker 1994 (USJ-47257!, CR-4468438!, W!, **this publication**); Serranías al NE de la Isla,

5°32′57″N, 87°03′56″W, 200 m, 14 Feb 1994, *Dauphin 1105* (USJ, **Dauphin 1995, 1999**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 500–634 m, 31 Mar 1988, *Lücking 92-332*, det. G. Dauphin Apr 2021 (USJ-95747!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Bazzania tricrenata (Wahlenb.) Lindb., *Musci Fenn. Exsic., fasc. 2*: [2 (adnot.)], 1872 (Brotherus 1872) var. ***tricrenata***.

≡*Jungermannia tricrenata* Wahlenb., *Fl. Carpat. Princ.*: 364, 1814 (Wahlenberg 1814). Type: Europe.

GUATEMALA. S. loc. (Grolle 1966d, 1972a; Hattori 1968b; Kachroo 1970; Worley 1972; Long 1979; Gradstein and Váňa 1987; Fulford and Sharp 1990; **Long and Grolle 1990**; Paton 1999; Bapna and Kachroo 2000a; Damsholt 2002; Zhang 2003; Stotler and Crandall-Stotler 2017). CHIMALTENANGO: Cerro above Tecpán, 9,300 ft (2,835 m), *Sharp 2582* (TENN, **Fulford 1959a, 1963a**); S. loc., 9,300 ft (2,835 m; **Schuster 1969a**); S. loc., *Sharp* (TENN, Pérez 2009).

COSTA RICA. GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 1842.1* (CR, **Dauphin 2005**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1627 p.p.*, det. A. Bernecker (USJ, **Morales 1991; Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Caucasus, China, Eastern Asia, Indian Subcontinent, Indo-China(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Southwestern USA, Southeastern USA, Mexico.

Bazzania wrightii (Gottsche ex Steph.) Steph., *Hedwigia* 27(11/12): 279, 1888 (Stephani 1888a).

≡*Mastigobryum wrightii* Gottsche ex Steph., *Hedwigia* 25(6): 237, 1886 (Stephani 1886b). Type: Cuba.

COSTA RICA. S. loc., *Lücking* (**Bernecker 1990**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Volcán Barva east, *Lücking CR-13-001* (**Bernecker 1990**); Barva cantón, Braulio Carrillo National Park, Volcán Barva west, Lagune, *Lücking CR-12-041*, *CR-12-054*, *CR-12-081*, *CR-12-105* (**Bernecker 1990**).

Also reported from the Caribbean, Western South America.

Blepharolejeunea S.W.Arnell, *Svensk Bot. Tidskr.* 56(2): 335, 1962 (Arnell 1962).

Blepharolejeunea incongrua (Lindenb. et Gottsche) van Slageren et Kruijt, *Beih. Nova Hedwigia* 80: 133, 1985 (van Slageren and Kruijt 1985).

≡*Lejeunea incongrua* Lindenb. et Gottsche, *Syn. Hepat.* 5: 750, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Phragmicoma nitidiuscula* Gottsche, *Ann. Sci. Nat., Bot.*, ser. 5, 1: 145, 1864 (Gottsche 1864), syn. fide van Slageren and Kruijt (1985). Type: Colombia.

≡*Brachiolejeunea nitidiuscula* (Gottsche) Steph. *Sp. Hepat. (Stephani)* 5: 124, 1912 (Stephani 1912a).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (van Zanten and Gradstein 1987; Schäfer-Verwimp and Vital 1989; Fulford and Sharp 1990; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). CARTAGO: Cartago cantón, S of Cartago, 2,900 m, Sep 1973, *Griffin et al. 435* (FLAS, U, **Gradstein et al. 1977** as *Brachiolejeunea nitidiuscula*; **van Slageren 1985a**; **van Slageren and Kruijt 1985**); Cartago cantón, S of Cartago, 2,900 m, Sep 1973, *Griffin et al. 560* (FLAS, U, **Gradstein et al. 1977** as *Brachiolejeunea nitidiuscula*; **van Slageren and Kruijt 1985**); Orosi cantón, Cordillera de Talamanca, La Georgina, *Griffin et al. 435* (FLAS, U, **Gradstein 1994**; **Kappelle 1996**; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Cerro Asunción, *Chavelleri et al. 1436* (USJ, U, **Morales 1991**); Paraíso cantón, Cerro Asunción, macizo Buenavista, 8 Jun 1983, *Chaverri et al. 1436* (USJ, U, **van Slageren and Kruijt 1985**; **Gradstein 1994**; **Dauphin 2005**); Pococí cantón, La Georgina, *Griffin et al. 560* (FLAS, U, **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); S. loc., *Griffin & Eakin 435* (FLAS, U, **van Slageren and Berendsen 1985**). SAN JOSÉ: Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro Buenavista (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0153*, det. Schäfer-Verwimp 2000 (MO-5915616!, **this publication**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Blepharolejeunea saccata (Steph.) van Slageren et Kruijt, *Beih. Nova Hedwigia* 80: 138, 1985 (van Slageren and Kruijt 1985).

≡*Dicranolejeunea saccata* Steph., *Hedwigia* 35(3): 78, 1896 (Stephani 1896). Type: Cuba.

***NICARAGUA.** *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, top and N slope of ridge SW of finca el Cielo, S of Rio Gusaneras, 13°15′N, 85°42′W, 1,200–1,330 m, 16 Jan 1979, *Stevens 11628*, det. Gradstein Jun 2017 (MO-6230317! http://tropicos.org/specimen/100369414, PC!, **this publication**).

COSTA RICA. S. loc. (Linares and Uribe 2002; Schäfer-Verwimp and Pócs 2009). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Moravia cantón, Bajo de La Hondura, *Standley 51842* (US, **Dauphin 2005**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51842 p.p.* (JE, **Herzog 1951** as *Dicranolejeunea saccata*; **Morales 1991**); Pérez Zeledón cantón, Cerro Buenavista, 22 Jul 1983, *Chaverri et al. 1577* (USJ, U, **Morales 1991**); S. loc., 9 Mar 1926, *Standley 57842* (JE, **van Slageren 1985a**; **van Slageren and Kruijt 1985**; **Gradstein 1994**).

Also reported from the Caribbean, Northern South America, Western South America.

Blepharolejeunea securifolia (Steph.) R.M.Schust., *Phytologia* 45(5): 424, 1980 (Schuster 1980b).

≡*Lejeunea securifolia* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 131, 1884 (Spruce 1884), nom. illeg. (ICN2018 Art 53.1; hom. illeg. non Gottsche 1882). Type: Ecuador.

≡*Brachiolejeunea securifolia* Steph., *Sp. Hepat. (Stephani)* 5: 128, 1912 (Stephani 1912a).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista, 22 Jul 1983, *Chaverri et al. 1577* (USJ, U, **van Slageren and Kruijt 1985**; **Gradstein 1994**; **Dauphin 2005**).

Also reported from Mexico, Northern South America, Western South America, Brazil, Southern South America.

Blepharostoma (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 18, 1835 (Dumortier 1835).

Blepharostoma trichophyllum (L.) Dumort., *Recueil Observ. Jungerm.*: 18, 1835 (Dumortier 1835).

≡*Jungermannia trichophylla* L., *Sp. Pl.* 1: 1135, 1753 (Linnaeus 1753). Type: Europe.

GUATEMALA. HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2006, *Pérez et al. 1236* (USCG, Pérez 2009). QUETZALTENANGO: San Carlos Sija municipio, Getenagre near Sija, 9,500 ft (2,896 m), 1 Jan 1945, *Sharp 1133* (TENN, **Gradstein and** Váňa **1987**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 4617b* (U, **Kappelle 1996**); S. loc. (Grolle 1966d, 1968d, 1969a; Hattori 1968b; Schuster 1968a, 1983a, 1990; Kachroo 1970; Worley 1972; Miller et al. 1983; Gradstein and Váňa 1987; Piippo et al. 1997; Srivastava 1998; Gradstein 1999a; Bapna and Kachroo 2000a; Damsholt 2002, 2013; Dauphin 2005; Gradstein and Holz 2005; Benitez et al. 2013). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110153*, *110895* (UC, **Norris et al. 2017**). CARTAGO: Paraíso cantón, La Georgina, *Dauphin 2243* (CR, **Dauphin 2005**). SAN JOSÉ: Between El Cañon and Ojo de Agua, 2,800–3,000 m, *Schuster* (**Schuster 2021**); Dota cantón, Cerro de Las Vueltas (**Schuster 1966** as *Blepharostoma trichophyllum* subsp. *trichophyllum*; **Morales 1991**; Dauphin 2005); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley & Valerio 43943* (S, US, **Grolle 1964b**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, West-Central Tropical Africa, East Tropical Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Malesia, Papuasia, Northeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, Northern South America, Western South America.

Brachiolejeunea (Spruce) Schiffn., *Hepat. Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

Brachiolejeunea laxifolia (Taylor) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

≡*Phragmicoma laxifolia* Taylor, *London J. Bot.* 6: 341, 1847 (Taylor 1847). Type: Ecuador.

=*Ptychocoleus reflexus* S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 329, 1967 (Winkler 1967), syn. fide Gradstein (1975). Type: El Salvador, Santa Ana, Metapan, SE-Hang des C. Miramundo bei der Hazienda Montecristo, 2,280 m, 23 May 1962, Winkler B/6/d/8 (type not found by Gradstein 1975).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,000 m, *Pérez 330* (USCG, Pérez **2009**); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1196* (USCG, Pérez 2009).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,280 m, 23 May 1962, *Winkler B/6/c/1*, *B/6/d/8* (ULM, **TYPE** of *Ptychocoleus reflexus*, **Winkler 1967** as *Ptychocoleus reflexus*; **Gradstein 1975** as *Ptychocoleus reflexus*; **Geissler and Bischler 1989** as *Ptychocoleus reflexus*).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Fulford and Sharp 1990; Gradstein 1999a; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014). CARTAGO: Aledano, 22 Jun 1983, *Chaverri & López 1519* (CR, U, **van Slageren 1985b**); Oreamuno cantón, Irazú National Park, 9°58′N, 83°40′W, 16 Oct 1999, *Holz CR 99-352*, det. Holz 2001 (MO-5282889!, **this publication**); S. loc., May 1900, *Wercklé 6243* (G20165, **van Slageren 1985b**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, 1,200–3,300 m, *Dauphin 1700* (CR, **Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/B* (**Schäfer-Verwimp 2001**); La Quebrada, *Schäfer-Verwimp & Holz SV/H-0253* (CR, **Schäfer-Verwimp 2001**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Chaverri & López 1519* (CR, U, **Morales 1991**; **Gradstein 1994**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Chaverri et al. 1519* (**Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0147/B* (GOET, **Schäfer-Verwimp 2001**).

PANAMA. †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This report must refer to the "new" comarca Naso

Tjër Di. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30905* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,550 m, *Schäfer-Verwimp & Verwimp 34394* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 303* (PMA, **Dauphin 2007**).

Also reported from West Tropical Africa(?), West-Central Tropical Africa(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

Brachiolejeunea leiboldiana (Gottsche et Lindenb.) Schiffn., *Hedwigia* 33(4): 182, 1894 (Schiffner 1894).

≡*Phragmicoma leiboldiana* Gottsche et Lindenb., *Syn. Hepat.* 2: 296, 1845 (Gottsche et al. 1845b). Type: Mexico.

=*Brachiolejeunea mamillata* Steph., *Sp. Hepat. (Stephani)* 5: 121, 1912 (Stephani 1912a), syn. fide van Slageren (1985b). Type: Andes Peruviae, Brasilia, Mexico.

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Brachiolejeunea mamillata*).

?COSTA RICA. ?GUANACASTE: Bagaces cantón, Rincón de La Vieja National Park, Estación Santa María, 10°53′N, 85°24′W, 700 m, *Dauphin et al. 2354* (CR, Dauphin 2005 [identification with doubt]).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, El Volcán, 8°46.9′N, 82°38.8′W, 1,410 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34653/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34663* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Brachiolejeunea phyllorhiza (Nees) Kruijt et Gradst., *Nova Hedwigia* 43(3/4): 299, 1986 (Kruijt and Gradstein 1986).

≡*Jungermannia phyllorhiza* Nees, *Fl. Bras. (Martius)* 1(1): 348, 1833 (Nees 1833b). Type: Brazil.

≡*Dicranolejeunea phyllorhiza* (Nees) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

GUATEMALA. S. loc. (Bastos 2004). *ALTA VERAPAZ: Cobán, Finca San Pedro, 1,300 m, Sep 1946, *R.I.D. Svihla 45-636* (NY 1672749 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1958835, **this publication**). RETALHULEU: San Felipe, *Maxon & Hay 3537* (US, **Gradstein 1994**; **Freire 2006**); San Felipe, *Maxon & Hay 3547* (US, **Gradstein 1994**; **Freire 2006**); San Felipe, *Maxon & Hay 3556* (US, **Gradstein 1994**; **Freire 2006**; **Pérez 2009**). *SUCHITEPÉQUEZ: Near Chicacao, Finca El Naranjo, Sep 1945, *R.I.D. Svihla 45-681* (NY 1672747 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1958833, **this publication**); near Chicacao, Finca El Naranjo, Sep 1945, *R.I.D. Svihla 45-674* (NY 1672748 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1958834, **this publication**).

COSTA RICA. S. loc. (Fulford and Sharp 1990 as *Dicranolejeunea phyllorhiza*; Bastos 2004). CARTAGO: Turrialba cantón, Reventazón, *Svihla 47-748* (NY, **Dauphin 2005**). SAN JOSÉ: Alajuelita, *Tonduz 15556b* (G, **Kruijt and Gradstein 1986**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, *Standley & Valerio 42436*, *43153*, *43411*, *43436*, *Standley 43411* (B, JE, US, **Herzog 1951** as *Dicranolejeunea 'phyllorrhizans'*; **Kruijt and Gradstein 1986**; **Morales 1991**; **Gradstein 1994**; **Kappelle 1996**; **Dauphin 2005**); San Vicente, Rio Virilla, *Tonduz 6238* (G, **Gradstein 1994**); San Vicente, Rio Virilla, 1895, *Tonduz* (B24575, G22692, **Kruijt and Gradstein 1986**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, along road to Rio Sereno at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34617/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

***Bryopteris* (Nees) Lindenb., *Syn. Hepat.* 2: 284, 1845 (Gottsche et al. 1845b).**

Bryopteris diffusa (Sw.) Nees, *Syn. Hepat.* 2: 286, 1845 (Gottsche et al. 1845b).

≡*Jungermannia diffusa* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica, Hispaniola.

≡*Lejeunea diffusa* (Sw.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 115, 1884 (Spruce 1884).

≡*Bryolejeunea diffusa* (Sw.) Steph., *Hedwigia* 27(11/12): 300, 1888 (Stephani 1888b), nom. inval. (ICN2018 Art. 35.1; genus not valid).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004**). EL PETÉN: Tikal National Park, Tikal, *Morgan 17* (MO https://www.tropicos.org/specimen/90205558, Pérez 2009).

HONDURAS. S. loc. (Fulford and Sharp 1990). FRANCISCO MORAZÁN: Tegucigalpa city, Libertad, *Lundell 2447* (MICH, **Stotler and Crandall-Stotler 1974**). YORO: Olanchito municipio, Coyoles, *Yuncker 7999* (DPU, **Stotler and Crandall-Stotler 1974**).

NICARAGUA. S. loc. (Oliveira-e-Silva and Yano 2000). *CHONTALES: Cuapa municipio, 7.5 km NNE of Cuapa along road toward el Zancudo, 12°19′13″N, 85°21′12″W, 560 m, 2 Dec 2012, *Magill 14316*, det. Atwood 2013 (MO-6490992! https://tropicos.org/specimen/102847621, **this publication**); Cuapa municipio, 7.5 km NNE of Cuapa along road toward el Zancudo, 12°19′13″N, 85°21′12″W, 560 m, 2 Dec 2012, *Magill 14358a*, det. Atwood 2013 (MO-6493075! https://tropicos.org/specimen

/102847620, **this publication**). GRANADA: Granada municipio, Volcán Mombacho, 560 m, *Baker 8522* (NY, **Gradstein 1994**).

COSTA RICA. Cordillera de Talamanca (Holz 2003); S. loc. (F, Cole 1983; Fulford and Sharp 1990; **Morales 1991**; Oliveira-e-Silva and Yano 2000; **Dauphin 2005**); S. loc., *Valerio 335-23* (MO, **Morales 1991**). CARTAGO: Cartago cantón, El Muñeco, 1,400–1,500 m, *Standley 33480* (**Dauphin 2005**); Cartago cantón, El Muñeco, N of Navarro, 1,400 m, *Standley 33430*, *33460*, *33928* (US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Dauphin 2005**); Jiménez cantón, Peijivalle, 900 m, *Standley 46866*, *Standley & Valerio 45255*, *46866* (S, US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Santiago, *Maxon 92* (NY, **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Dauphin 2005**); Turrialba, *Maxon 197* (NY, **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). GUANACASTE: Tilarán cantón, El Arenal, *Standley & Valerio 45255* (S, US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). LIMÓN: Orillas del Río Borozil, *Brenes 12162* (CR, **Stotler and Crandall-Stotler 1974**); S. loc. (F, **Stotler and Crandall-Stotler 1974**); S. loc., 150 m, *Gutiérrez 157*, *214* (F, **Stotler and Crandall-Stotler 1974**; **Morales 1991**; **Dauphin 2005**); S. loc., *Valerio 335-2* (**Stotler and Crandall-Stotler 1974**; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, *Standley & Valerio 48761* (US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974**; **Gradstein 1994**). PUNTARENAS: Buenos Aires cantón, Boruca (**Tonduz 1895a** as *Bryolejeunea diffusa*); Buenos Aires cantón, Boruca, *Pittier 6069* (**Stephani 1893c** as *Bryolejeunea diffusa*; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Santiago, *Maxon 92* (NY, **Gradstein 1994**).

PANAMA. DARIÉN: Pinogana distrito, 1.5 mi (2.4 km) along trail to Boca de Cupé from Cana, *Allen 8927A* (MO, **Stotler et al. 1998**); Pinogana distrito, 1.5 mi (2.4 km) along trail to Boca de Cupé from Cana, 4 May 1990, *Allen 8938*, det. Whittemore 1990 (MO-3678090!, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Bryopteris filicina (Sw.) Nees, *Syn. Hepat.* 2: 284, 1845 (Gottsche et al. 1845b).

≡*Jungermannia filicina* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

=*Jungermannia trinitensis* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 12, 1833 (Lehmann 1833), syn. fide Gradstein (1994). Type: Trinidad.

≡*Bryopteris trinitensis* (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 2: 285, 1845 (Gottsche et al. 1845b).

=*Bryopteris tenuicaulis* Taylor ex Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 285, 1845 (Gottsche et al. 1845b), syn. fide Gradstein (1994). Type: Ecuador.

≡*Bryolejeunea tenuicaulis* (Taylor ex Gottsche, Lindenb. et Nees) Steph., *Primit. Fl. Costar.*: 115, 1893 (Stephani 1893c), nom. inval. (ICN2018 Art. 35.1; genus not valid).

=*Bryopteris filicina α hookeriana* Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2; 285, 1845 (Gottsche et al. 1845b). Type: Jamaica, Brazil.

=*Bryopteris fruticulosa* Taylor, *London J. Bot.* 5: 384, 1846 (Taylor 1846a), syn. fide Gradstein (1994). Type: "St. Domingo."

≡*Bryolejeunea fruticulosa* (Taylor) Steph., *Primit. Fl. Costar.*: 115, 1893 (Stephani 1893c), nom. inval. (ICN2018 Art. 35.1; genus not valid).

=*Bryopteris liebmaniana* Lindenb. et Gottsche, *Syn. Hepat.* 5: 738, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Bryopteris flaccida* Lindenb. et Hampe, *Linnaea* 24(6): 640, 1852 (Hampe 1851a), syn. fide Gradstein (1994). Lectotype (Gradstein 1994 as "holotype"): Costa Rica, *Oersted 4* (BM, isolectotype C, NY, S).

≡*Bryolejeunea flaccida* (Lindenb. et Hampe) Steph., *Primit. Fl. Costar.*: 115, 1893 (Stephani 1893c), nom. inval. (ICN2018 Art. 35.1; genus not valid).

=*Lejeunea longispica* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 114, 1884 (Spruce 1884), syn. fide Stotler and Crandall-Stotler (1974). Type: Peru.

≡*Bryopteris longispica* (Spruce) Steph., *Biblioth. Bot.* 21(87): 250, 1916 (Stephani 1916b).

=*Bryopteris brevis* Steph., *Sp. Hepat. (Stephani)* 5: 3, 1912 (Stephani 1912a), syn. fide Gradstein (1994). Type: Bolivia.

=*Bryopteris tenuicaulis* var. *flagellifera* Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Stotler and Crandall-Stotler (1974). Original material: Honduras, Lancetilla Valley (no original material of this name found).

=*Bryopteris fruticulosa* f. *propagulifera* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 132, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Stotler and Crandall-Stotler (1974). Original material: Costa Rica: Prov. Limon, La Columbiana Farm, 70 m, 6–7 Mar 1924, *Standley* 36749 (US-04544023 http://n2t.net/ark:/65665/30439dc68-8f12-453b-9034-6eaf114efa0a).

=*Bryopteris tenuicaulis* f. *flagellifera* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 132, 1951 (Herzog 1951), syn. fide Stotler and Crandall-Stotler (1974). Lectotype (Stotler and Crandall-Stotler 1974): Honduras, Dept. Atlántida: Lancetilla Valley, near Tela, altitude 20–600 m, 1927–1928, *Standley 53219* (F-C0000049F https://collections-botany.fieldmuseum.org/catalogue/1766944, isolectotype JE-04005919 https://je.jacq.org/JE04005919).

=*Bryopteris fruticulosa* subsp. *monoica* Stotler, *Bryophyt. Biblioth.* 3: 108, 1974 (Stotler and Crandall-Stotler 1974). Type: Peru.

=*Bryopteris filicina* var. *fissiflora* Herzog ex Stotler et Crand.-Stotl., *Bryophyt. Biblioth.* 3: 124, 1974 (Stotler and Crandall-Stotler 1974), nom. inval. (ICN2018 Art. 36.1(c); publ. in syn. [sub *Bryopteris liebmaniana*]). Original material: San Jose: Zurquí, ~2,000– 2,500 m, 13 February 1926, *Standley & Valerio 48075* (US-04544116 http://n2t.net/ark:/65665/300c7654c-0268-4644-84c3-442f24d43eed).

GUATEMALA. S. loc. (Stephani 1912a as *Bryopteris flaccida*; Bonner 1963a as *Bryopteris flaccida*; Fulford 1987 as *Bryopteris trinitensis*; Fulford and Sharp 1990 as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana,*' and *Bryopteris trinitensis*; Lücking 1995; Oliveira-e-Silva and Yano 2000); S. loc., *Bartlett 12265b* (hb. Fulford, **Crandall 1969**); S. loc., *Steyermark 29825*, *31481*, *31891*, *32479*, *32492*, *32828*,

37064, *46738* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ALTA VERAPAZ: Between Cobán and San Pedro, ~1,360 m, *Standley 90039* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *monoica*); Cerro Chinajá, between Finca Yalpemech and Chinajá, *Steyermark 45548* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); same location, *Steyermark 45585* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Cobán municipio, Cubilquitz, 350 m, *Türckheim 4938* (G, NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Gradstein 1994**; **Freire 2006**; **Pérez 2009**); Cobán, *Türckheim 5406*, *5833* (G, NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Gradstein 1994**; **Freire 2006**); Cobán, 1,600 m, *Türckheim* (NY https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1959047, BM, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Cobán, 1,650 m, Jun 1908, *Türckheim* (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, NY, **Thiers 1985** as *Bryopteris flaccida*); E of Tactic, road to Tamahú, 1,500–1,600 m, 9 Apr 1939, *Standley 71116*, *71395* (F-1038940, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Lemos-Michel and Yano 1998** as *Bryopteris flaccida*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Standley 90355* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); S. loc., *Standley 90446* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); S. loc., *Standley 91790*, *92130* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). CHIMALTENANGO: Acatenango municipio, Quisache, ~1,800 m, *Standley 62014* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Barrancó, 1,800 m, *Standley 62014* (NY-1672850 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1959002, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); S. loc., *Standley 62014* (MO, Pérez 2009 as *Bryopteris tenuicaulis*). EL PETÉN: San José municipio, Cerro Cahuí, *Can et al.* (USCG, **Morales 2011**); San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**). EL PROGRESO: Finca Bucaral, *Sharp 2738* (TENN, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); Finca Plamonte, *Steyermark 43491*, *43503* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); Mount Virgen, *Steyermark 42642* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*). HUEHUETENANGO: S. loc., *Pérez 1430* (USCG, Pérez 2009). IZABAL: East coast, *Watson 58c*, det. (NY, **Fulford 1941b**; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Steyermark 31590*, *33512*, *34320*, *37370*, *39152* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Steyermark 41889* (hb. Fulford, F, **Crandall 1969** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Watson 59* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). QUETZALTENANGO: S. loc., *Standley 83344* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Standley 85044*, *85557* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Zunil municipio, Volcán Zunil, *Standley 65311* (NY, MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Gradstein 1994**; **Freire 2006**; **Pérez 2009** also as *Bryopteris tenuicaulis*); Zunil municipio, Volcán Zunil, *Standley 65430* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Gradstein 1994**; **Freire 2006**); Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, Jan 2006, *T. S. Quedensley 3851* (NY 1088869 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1219017, **this publication**). QUICHÉ: S. loc., *Pérez 2304* (USCG, Pérez 2009). SACATEPÉQUEZ: Chicacao municipio, Suchiate, *Svihla 45-466* (WTU, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*). SAN MARCOS: Barranco, Emergencia, *Standley 68547*, *68553* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); S. loc., *Standley 33406*, *33846*, *86242*, *etc.* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*). SUCHITEPÉQUEZ: Volcán Santa Clara, *Steyermark 46659D*, *46664*, *46667* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*' and *Bryopteris trinitensis*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. Maya Mountains, *Robertson* (NY, **Gradstein 1994**); near border with Guatemala, *Schipp 878* (NY, **Gradstein 1994**); S. loc. (**Fulford 1938** as *Bryopteris fruticulosa*; Fulford and Sharp 1990 as *Bryopteris fruticulosa*; Lücking 1995; Whittemore and Allen 1996 [Cayo-Toledo border]; Oliveira-e-Silva and Yano 2000); S. loc., *Lundell 693* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). CAYO: Cave Branch River, 14 Aug 1976, *Whitefoord 1246*, det. Dauphin May 2017 (MO-3655719!, **this publication**); Cohume Ridge, *Mains 3815* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 6 Dec 1996, *Allen 18024*, det. Whittemore 1997 (MO-4417019! https://tropicos.org/specimen/90046813), **this publication**), *Allen 18069*, det. Whittemore 1997 (MO-4417020! https://tropicos.org/specimen/90046812, **this publication**); Macal River, 24 Jan 1974, *Dwyer & Liesner 12348D*, det. Dauphin May 2017 (MO-2174533!, **this publication**); S. loc. (Whittemore and Allen 1996); S. loc., Dec 1993, *Allen 15041*, *15198*, *15237* (BRH, MO, **Whittemore and Allen 1996** as *Bryopteris fruticulosa* Taylor); Valentin, *Mains 3599*, *3616*, *3750*, *3770* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). STANN CREEK: Fallabon, Yarxha, *Lundell 2038*, *2039* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Middlesex, *Lundell 2814* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc. (Whittemore and Allen 1996). TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 980 m, 20 Feb 1997, *Allen 18959*, det. Dauphin May 2017 (MO-5228030! https://tropicos.org/specimen/90102180, **this publication**); Columbia River Forest Reserve, trail from Camp 2 to Chiclero Camp, 16°23′17″N, 89°04′36″W, 695 m, 15 Feb 1997,

Allen 18769, det. Dauphin May 2017 (MO-5228031! https://tropicos.org/specimen/90102177, **this publication**); Edwards Road beyond Columbia, beyond Central Camp, 16 Jun 1951, *Gentle 7369*, det. Dauphin May 2017 (MO-5228145! https://tropicos.org/specimen/90103149, **this publication**); Punta Gorda, *Dodge 41*, *70* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Punta Gorda, *White 36*, *66* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Punta Gorda, Nov 1932 (CINC, hb. Fulford, **Fulford 1941b** as *Bryopteris fruticulosa*); Punta Gorda, Nov 1932, *White 38*, det. Dauphin May 2017 (MO-2226841!, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Punta Gorda, Nov 1932, det. Dauphin May 2017 (MO-5223882! https://tropicos.org/specimen/90093903, **this publication**); S. loc. (Whittemore and Allen 1996); S. loc., Dec 1993, *Allen 15329* (BRH, MO, **Whittemore and Allen 1996** as *Bryopteris fruticulosa*).

HONDURAS. S. loc. (Verdoorn 1931 as *Bryopteris tenuicaulis* f. *flagellifera*; Fulford 1987 as *Bryopteris trinitensis*; Fulford and Sharp 1990 as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana,*' and *Bryopteris trinitensis*; Lücking 1995; Oliveira-e-Silva and Yano 2000). ATLÁNTIDA: At base of N slope of Pico Bonito, 15°42′N, 86°51′W, 140 m, 8 May 1993, *Liesner & Mejia 26009*, det. Whittemore 1996 (MO-4428483! https://tropicos.org/specimen/90040056, **Hartmann et al. 2006**); El Porvenir municipio, Pico Bonito National Park, along stream entering Rio Bonito, 15°40′N, 86°51′W, 500 m, 25 Apr 1996, *Allen 17608*, det. Whittemore 1996 (MO-4428477! https://tropicos.org/specimen/90040062, **this publication**); S. loc., *Liesner & Merida* (**Hartmann et al. 2006**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53219*, *53383*, *53962*, *etc.* (F, NY, S, US, **Standley 1931** as *Bryopteris brevis*, *Bryopteris tenuicaulis*, and *Bryopteris tenuicaulis* var. *flagellifera*; **Herzog 1951** as *Bryopteris brevis* and *Bryopteris tenuicaulis* f. *flagellifera*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis* and *Bryopteris fruticulosa* subsp. *fruticulosa*); Tela municipio, Lancetilla Valley, *Yuncker 5113* (DPU, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*). COMAYAGUA: El Plan to quebrada Agua Amarilla, ~11 km E of Lago Yajoa, 14°48′N, 88°52′W, 30 Apr 1996, *Allen 17766*, det. Whittemore 1966 (MO-4428471!, **this publication**); from El Plan to quebrada Agua Amarilla, ~11 km E of Lago Yajoa, 14°48′N, 88°52′W, 1,740 m, 10 Mar 1993, *Allen 13788*, det. Whittemore 1996 (MO-4428488! https://tropicos.org/specimen/90040029, **this publication**); Siguatepeque municipio, El Achote, *Yuncker 6624* (DPU, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). CORTÉS: N of Lake Yojoa, 600–900 m, *Morton 7640* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'); N of Lake Yojoa, *Morton 7640c* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Gradstein 1994**); San Francisco de Yojoa municipio, along Rio Cusuco, 15°31′N, 88°14′W, 1,500 m, 18 Mar 1993, *Allen 14058*, det. Whittemore 1996 (MO-4428486! https://tropicos.org/specimen/90040030, **this publication**); San Pedro Sula municipio, Cusuco National Park, Rio Cusuco to summit of Cerro Jilinco, 1,600–2,242 m, 20 Mar 1993, *Allen 14311*, det. Whittemore 1996 (MO-4428487! https://tropicos.org/specimen/90040031, **this publication**); San Pedro Sula municipio, Peña Blanca, San Juancito Mountains, 1,900–2,000 m, *Morton 7264* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*). FRANCISCO MORAZÁN: Guaimaca, *Weaver 4* (NY, **Gradstein 1994**); San Antonio de Oriente municipio, Cerro de Uyuca, *Carlson 2487* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); San Antonio de Oriente municipio, Cerro de Uyuca, 1,600–1,800 M, 1949, *Standley 26115* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Lemos-Michel and Yano 1998** as *Bryopteris flaccida*). LA PAZ: El Rincón, *Yuncker 6606* (DPU, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). *LEMPIRA: Gracias municipio, Montana de Celaque, SE part of massif, 14°33′N, 88°39′W, 1,800–1,900 m, 24 May 1991, *Davidse & Zúñiga 34665A*, det. Whittemore 1996 (MO-4428469! https://tropicos.org/specimen/90040055, **this publication**). *OCOTEPEQUE: La Labor municipio, Montana del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 2,000–2,180 m, 24 Mar 1993, *Allen 14509*, det. Whittemore 1996 (MO-4428484! https://tropicos.org/specimen/90040033, **this publication**). *YORO: Cordillera Nombre de Dios, N slope ridge between Rio Guan Guan und Quebrada Aguacatal, 15°30′N, 87°28′W, 300 m, 6 Mar 1993, *Allen 13645*, det. Whittemore 1996 (MO-4428485! https://tropicos.org/specimen/90040032, **this publication**).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Bryopteris fruticulosa*; Lücking 1995; Oliveira-e-Silva and Yano 2000). *AHUACHAPÁN: Apaneca municipio, Lago de Ninfas, Cordillera de Grade de Apaneca, NW of Juzyua, 13°52′29″N, 89°47′55″W, 1,600 m, 6 Feb 1998, *Davidse 37474*, det. Dauphin May 2017 (MO-5280790! https://tropicos.org/specimen/90136887, **this publication**); San Francisco Menéndez municipio, El Impossible Reserve, Campana, 13°51′N, 89°54′W, 1,400 m, 24 Jan 1998, *Monro 2039*, det. Dauphin May 2017 (MO-5280778! https://tropicos.org/specimen/90136888, **this publication**); San Francisco Menéndez municipio, San Benito, W de la cabecera del cafetal El Pezote, 13°49′N, 89°56′W, 12 Aug 1992, *Sandoval 575*, det. Dauphin May 2017 (MO-4448874! https://tropicos.org/specimen/102498874, LAGU, B, **this publication**). SANTA ANA: Finca San Nicolas, *Calderon 1768a* (US, **Standley and Calderón 1925** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Gradstein 1994**); Metapán municipio, Parque Nacional Monte Cristo, Cordillera de Metapán, 14°27′N, 89°22′W, 1,900–2,000 m, 27 Jan 1998, *Davidse 37211*, det. Dauphin May 2017 (MO-5280777! https://tropicos.org/specimen/90136889, **this publication**).

NICARAGUA. S. loc. (Fulford 1987 as *Bryopteris trinitensis*; Lücking 1995; Oliveira-e-Silva and Yano 2000); S. loc., *Schaller* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Schwann* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris*

trinitensis); S. loc., 24 Nov 1979, *Stevens* (H, **Ahonen 2006**). *ATLÁNTICO NORTE: Road to Nueva America, 27 Apr 1978, *Stevens 8320B*, det. Dauphin May 2017 (MO-2846431!, **this publication**); Siuna municipio, Cerro Waylawás (Peñas Blancas), 13°30′20″N, 84°45′25″W, 28 Oct 1982, *Grijalva 1714*, det. Dauphin May 2017 (MO-5274373!, **this publication**). ATLÁNTICO SUR: Bluefields municipio, Cerro San lsidro, *Proctor 27093* (NY, U, **Gradstein 1994**); Decembocadura Río Grande municipio, Karawala, *Schramm* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). CHONTALES: La Libertad, *Standley 9025* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*). *ESTELÍ: Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 1,550–1,600 m, 24 Nov 1979, *Stevens & Grijalva 16289*, det. Dauphin May 2017 (MO-6236098! https://tropicos.org/specimen/100366010, **this publication**); Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 1,550–1,600 m, 24 Nov 1979, *Stevens & Grijalva 16291*, det. Dauphin May 2017 (MO-6236175! https://tropicos.org/specimen/100370978, **this publication**); Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 1,550–1,600 m, 24 Nov 1979, *Stevens & Grijalva 16298*, det. Dauphin May 2017 (MO-6236031! https://tropicos.org/specimen/100366531, **this publication**); Estelí municipio, Laguna de Miraflores, 13°15′N, 86°15′W, 1,260–1,300 m, 13 Sep 1981, *Moreno 11124D p.p.*, det. Dauphin May 2017 (MO-6699904! https://tropicos.org/specimen/100988678, **this publication**). GRANADA: Granada municipio, Volcán Mombacho, *Baker 2369* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Gradstein 1994**); Granada municipio, Volcán Mombacho, *Baker 2506* (NY, **Gradstein 1994**). JINOTEGA: Jinotega municipio, Cerro Slalci, *Standley 10451* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); Jinotega municipio, E of Jinotega, Finca Aventina, *Standley 9942*, *9945* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Jinotega municipio, E of Jinotega, Finca San Rogue, *Standley 10876* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*). MANAGUA: El Crucero, 800–900 m, *Standley 8212* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); El Crucero, 800–900 m, *Standley 8413* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Managua municipio, Casa Colorado, *Standley 8400* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*). *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, SE side, 13°14–15′N, 85°38–39′W, 1,000–1,400 m, 18–20 Jan 1982, *Stevens et al. 21167*, det. Dauphin May 2017 (MO-6236088! https://tropicos.org/specimen/100366195, **this publication**); La Dalia municipio, Macizos de Peñas Blancas, SE side, 13°14–15′N, 85°38–39′W, 1,000–1,400 m, 18–20 Jan 1982, *Stevens et al. 21169*, det. Dauphin May 2017 (MO-5228168! https://tropicos.org/specimen/90103062, **this publication**); Matagalpa municipio, along Hwy 3 ~1 km NW of La Fundadora entrance, 13°01′N, 85°56′W, 30 Aug 1983, *Stevens & Miller 22501*, det. Whittemore May 1989 (MO-3669082! https://tropicos.org/specimen/100201558, **this publication**); Matagalpa municipio, Cerro Carlota, 12°58′N, 85°52′W, 1,250–1,300 m, 23 Oct 1982, *Moreno 18183*, det. Dauphin May 2017 (MO-5281064! https://tropicos.org/specimen/90137327, **this publication**); Río Blanco municipio, Falda NE Cerro Musún, Rio Bilampi, 4 km SW de Wanawas, 13°00–01′N, 85°14′W, 300–500 m, 15 May 1980, *Araquistain & Moreno 2612c*, det. Atwood 2016 (MO-6691210! https://tropicos.org/specimen/102957371, **this publication**). RÍO SAN JUAN: San Juan del Norte municipio, Greytown, Camp Menocal, *Shimek & Smith* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 718* (CR, **Kappelle 1996**); S. loc. (**Stephani 1890b** as *Bryopteris flaccida*, 1912a as *Bryopteris flaccida* and *Bryopteris liebmaniana*; Verdoorn 1931 as *Bryopteris tenuicaulis* f. *flagellifera*; Pagán 1939c; Bonner 1963a as *Bryopteris liebmaniana*; Cole 1982 as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana*,' and *Bryopteris trinitensis*, 1983 as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana*,' and *Bryopteris trinitensis*; Fulford 1987 as *Bryopteris trinitensis*; **Fulford and Sharp 1990** as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana*,' and *Bryopteris trinitensis*; Oliveira-e-Silva and Yano 2000); S. loc., *hb. Stephani 15512* (G, **Morales 1991** as *Bryopteris flaccida*); S. loc., *Maxon* (**Evans 1907b**); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851** as *Bryopteris flaccida*); S. loc., *Oersted 4* (BM, C, NY, S, **TYPE** of *Bryopteris flaccida*, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); S. loc., 8,000 ft (2,438 m), *Oersted* (S, NY, **Hampe 1851a** as *Bryopteris flaccida*; **Bonner 1963a** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*; **Lemos-Michel and Yano 1998** as *Bryopteris flaccida*); S. loc., *Unknown* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Valerio 6* (S, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); S. loc., *Wercklé* (NY, PC, **Bischler 1965** as *Bryopteris liebmaniana*; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*). ALAJUELA: S. loc., *Polakowsky* (**Polakowsky 1879** as *Bryopteris filicina hookeriana*); S. loc., Jun 1875, *Polakowsky 127* (**Polakowsky 1877** as *Bryopteris filicina hookeriana*; **Schiffner 1894** as *Bryopteris tenuicaulis*); San Ramón cantón, Montes de Aguacate, *Oersted* (**Hampe 1851b** as *Bryopteris filicina hookeriana*; **Müller 1851** as *Bryopteris filicina hookeriana*; **Polakowsky 1879** as *Bryopteris filicina hookeriana*); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Lucas 45*, *Norris 110060*, *110816* (UC, **Norris et al. 2017**); San Ramón cantón, Reserva Biológica Alberto Brenes, Quebrada Azul, *Picado 345* (CR, **Dauphin 2005**); San Ramón cantón, Río San Pedro, *Brenes 15094* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'; **Morales 1991** as *Bryopteris liebmaniana*); San Ramón cantón, Río San Pedro, *Brenes 16185* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*). CARTAGO: Alto de La Estrella, *Standley 39076*, *39079*, *39111* (US, **Herzog 1951** as

Bryopteris flaccida; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); Alto de La Estrella, *Standley 39284* (F, US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*; **Gradstein 1994**); Cartago cantón, Aguacaliente, *Oersted* (C, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Cartago cantón, El Muñeco, *Standley & Valerio 51304* (US, **Morales 1991** as *Bryopteris flaccida*); Cartago cantón, El Muñeco, *Standley et al. 51049* (hb. Fulford, US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Cartago cantón, El Muñeco, N of Navarro, 1,400 m, *Standley 33505* (US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley & Valerio 51304* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); same location, *Standley 51304* (**Herzog 1951** as *Bryopteris flaccida*); same location, *Standley et al. 33934* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); same location, *Standley 33934* (**Herzog 1951** as *Bryopteris tenuicaulis* f. *flagellifera*; **Morales 1991** as *Bryopteris trinitensis*); Cartago cantón, El Muñeco, S of Navarro, 1,400 m, *Standley 51049* (**Herzog 1951** as *Bryopteris tenuicaulis* f. *flagellifera*); Cartago, *Griffin & Morales 147* (FLAS, NY, **Gradstein 1994**); Cartago, 1,050 m, *Maxon 86* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *monoica*; **Gradstein 1994**); El Guarco cantón, Santa Clara, 1,950 m, *Maxon & Harvey 8139*, *8160* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); Finca Las Cóncavas, 1,200–1,300 m, *Standley 41480* (US, **Herzog 1951** as *Bryopteris tenuicaulis*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Jiménez cantón, Juan Viñas (Tonduz 1895b as *Bryolejeunea fruticulosa*); Jiménez cantón, Juan Viñas, *Pittier 6047* (**Stephani 1893c** as *Bryolejeunea fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Jimenéz cantón, Pejibaye (Dauphin 2005); Jiménez cantón, Pejibaye, *Standley & Valerio 46958* (S, US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris 'liebmanniana'*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris liebmaniana*); Jiménez cantón, Pejibaye, *Standley & Valerio 47131* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Jiménez cantón, Río Naranjo, *Tonduz 15512 p.p.* (MO, NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida* and *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris flaccida* and *Bryopteris liebmaniana*); La Union cantón, Carpintera forest, *Little 5570*, *5577*, *5588*, *5596* (hb. Little, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); La Union cantón, Carpintera forest, Tres Rios, Jun 1875, *Polakowsky 109* (W, **Polakowsky 1877** as *Bryopteris flaccida*; **Schiffner 1894** as *Bryopteris flaccida*; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); La Union cantón, Cerro de La Carpintera, 1,000–1,850 m, *Standley 34265* (US, **Herzog 1951** as *Bryopteris flaccida*; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); La Union cantón, Cerro de La Carpintera, 1,000–1,850 m, *Standley 34278* (US, **Herzog 1951** as *Bryopteris flaccida*; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); La Unión cantón, Tres Ríos, 1,300–2,000 m, *Allen* (REED, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); Oreamuno cantón, Rio Reventado, *Standley & Valerio 49486* (US, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Oreamuno cantón, Rio Reventado, 1,460–1,650 m, *Standley & Valerio 49686* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Oreamuno cantón, Río Reventado, N of Cartago, 1,460–1,650 m, *Standley 49486* (**Herzog 1951**); Paraíso cantón, Jardín Lankester, *Griffin & Morales C147* (**Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Paraíso cantón, Orosi, *Standley 39679* (US, **Herzog 1951**; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Holz CR 99-253* (**Hartmann et al. 2006**); S. loc., *Polakowsky* (**Polakowsky 1879** as *Bryopteris flaccida*); Santiago, 1,050 m, *Maxon 86* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Turrialba cantón, Guayabo, *Infante 84* (FLAS, USJ, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Turrialba cantón, Santa Cruz, *Valerio 1220* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); Turrialba cantón, Valle de Tuis, *Tonduz 15512* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, *Dauphin et al. 3308*, *3349* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, 1,100 m, 26 Sep 1990, *Chávez 83a*, det. Dauphin May 2017 (MO-4446135! https://tropicos.org/specimen/90029813, **this publication**); Quebrado Azul, lava slopes of Volcán Terrorio, *Dodge & Wood 6648* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Tilarán cantón, Arenal, ~500 m (Dauphin 2005); Tilarán cantón, Arenal, Naranjos Agrios, 600–700 m, *Standley 46500* (US, **Herzog 1951** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Tilarán cantón, El Arenal, *Standley & Valerio 45075*, *45252* (**Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Tilarán cantón, El Arenal, 485–600 m, *Standley 45075*, *45252* (**Herzog 1951** as *Bryopteris tenuicaulis* f. *flagellifera*); Tilarán cantón, El Silencio, *Standley & Valerio 44802* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*;

Morales 1991 as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris longispica*); Tilarán cantón, El Silencio, 750 m, *Standley 44802* (**Herzog 1951** as *Bryopteris longispica*); Tilarán cantón, Los Ayotes, 600–700 m, *Standley & Valerio 45408* (US, **Herzog 1951** as *Bryopteris tenuicaulis* f. *flagellifera*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Tilarán cantón, Los Ayotes, *Standley & Valerio 45480* (US, **Morales 1991** as *Bryopteris trinitensis*); Tilarán, 500–650 m, *Standley & Valerio 44308* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Tilarán, *Standley & Valerio 44802* (S, **Stotler and Crandall-Stotler 1974** as *Bryopteris 'liebmanniana'*; **Morales 1991** as *Bryopteris liebmaniana*); Tilarán, 500–600 m, *Standley 44308* (**Herzog 1951** as *Bryopteris fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Tilarán, *Valerio 1169* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*). HEREDIA: Barva cantón, Barva forest, *Pittier 6019* (**Stephani 1893c** as *Bryolejeunea fruticulosa*); Barva cantón, Barva forest, *Pittier 6050* (**Stephani 1893c** as *Bryolejeunea tenuicaulis*); Barva cantón, Barva forest, *Pittier 6051* (**Stephani 1893c** as *Bryolejeunea flaccida*; **Morales 1991** as *Bryopteris flaccida*); Barva cantón, Cerro Gallito (S, **Morales 1991** as *Bryopteris trinitensis*); Barva cantón, Cerro Gallito, *Valerio 32245*, *32246* (CR, **Morales 1991** as *Bryopteris fruticulosa* subsp. *monoica*); La Uvita, *Morales 265* (**Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Monte Cristo, 1,720 m, *Rojas 477* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); San Isidro cantón, Cerro Zurquí, *Standley & Valerio 50711* (S, **Morales 1991** as *Bryopteris flaccida*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50711* (**Herzog 1951** as *Bryopteris flaccida*); San Isidro cantón, Cerro Zurquí, NE of San Isidro, 2,000–2,400 m, *Standley & Valerio 51304* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*); San Isidro cantón, Yerba Buena, *Standley & Valerio 49965* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris 'liebmanniana'*; **Morales 1991** as *Bryopteris liebmaniana*; **Gradstein 1994**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49965* (**Herzog 1951** as *Bryopteris trinitensis*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-30*, *92-194*, *94-30* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Guápiles, 300–500 m, *Standley 37049*, *373217* (**Herzog 1951** as *Bryopteris tenuicaulis* f. *flagellifera*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Pococí cantón, Tortuguero, *Steere 76*, *87*, *88*, *89* (NY, **Gradstein 1994**); Siquirres cantón, Cairo (Dauphin 2005); Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48683*, *48714*, *48847* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Siquirres cantón, Cairo, Finca Hamburgo, *Standley 48092*, *48683*, *48847*, *etc.* (**Herzog 1951** as *Bryopteris fruticulosa* and *Bryopteris tenuicaulis* f. *flagellifera*); Siquirres cantón, Finca La Colombiana, 70 m, *Standley 36749* (JE?, US, **TYPE** of *Bryopteris fruticulosa* f. *propagulifera*, **Herzog 1951** as *Bryopteris fruticulosa* f. *propagulifera*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Siquirres cantón, Finca La Colombiana, 70 m, *Standley 36849* (US, **Herzog 1951** as *Bryopteris fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Siquirres cantón, Finca La Colombiana, 70 m, *Standley 36946* (**Herzog 1951** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Siquirres cantón, La Colombiana Farm of United Fruit, ~70 m, *Standley 36489* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Talamanca cantón, Reserva Indigena Talamanca Sukut, 9°24′15″N, 82°58′10″W, 350–550 m, 6 Jul 1989, *Hammel et al. 17553*, det. Dauphin May 2017 (MO-3977741! https://tropicos.org/specimen/804477, **this publication**); Talamanca cantón, Río Cerere, *Carballo 484* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Picado 248* (CR, **Dauphin 2005**); Coto Brus cantón, San Vito de Java, *Moore* (F, NY, **Gradstein 1994**); Garabito cantón, Carara National Park, Quebrada Los Monos, *Zúñiga 2301* (CR, **Dauphin 2005**); Garabito cantón, vicinity of Capulín, Río Grande de Tárcoles, 80 M, *Standley 40141* (US, **Herzog 1951** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Golfito cantón, Piedra Blanca, 2,000 m, *Valerio* (S, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James, J. 16* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*, **Morales 1991** as *Bryopteris trinitensis*); Monteverde, *James, J. 26 p.p.* (REED, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris trinitensis*); Monteverde, *James, J. 33* (US, REED, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Gradstein 1994**); Monteverde, *James, J. 63* (REED, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Monteverde, *James, J. 84* (REED, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Monteverde, *James, J. B27* (REED, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Monteverde, *James, J.* (US, REED, F, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Monteverde, Feb 1963, *James, W.* (US, **Reed and Robinson 1971** as *Bryopteris*

fruticulosa); Monteverde, 29 Dec 1964, *James, W. 28*, *33* (US, **Reed and Robinson 1971** as *Bryopteris fruticulosa*); Monteverde, 10 Jun 1966, *James, M. 16* (R, **Reed and Robinson 1971** as *Bryopteris trinitensis*); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); S. loc. (**Merwin et al. 2001**); S. loc., *Gradstein & Dauphin 9351* (**Hartmann et al. 2006**); S. loc., *Quesada 1229* (**Hartmann et al. 2006**); S. loc., *Stephani 15512* (G, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*). SAN JOSÉ: Alajuelita cantón, La Cruz, *Rojas 398* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'; **Morales 1991** as *Bryopteris liebmaniana*); Aserrí cantón, between Aserrí and Tarbaca, 1,600–1,900 m, 12 Feb 1924, *Standley 34170*, *34191* (US, **Herzog 1951** as *Bryopteris flaccida*; **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*; **Lemos-Michel and Yano 1998** as *Bryopteris flaccida*); Aserrí cantón, Tablazo, 1,800 m, 27 Jul 1927 (S, **Lemos-Michel and Yano 1998** as *Bryopteris flaccida*); Cerro Gallito, 2,000 m (S, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Cerro Zurquí, *Standley & Valerio 48090*, *48092* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Morales 1991** as *Bryopteris flaccida*); Chirripó National Park, *Chaverri et al. 1875* (U, **Gradstein 1994**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, 7 km N de Santa María de Dota, *Standley 43838* (US, **Morales 1991** as *Bryopteris trinitensis*); Dota cantón, NE of El Copey, Laguna de la Escadra, 2,000–2,200 m, *Standley 41798* (US, **Herzog 1951** as *Bryopteris tenuicaulis*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); Dota cantón, Quebradillas, 7 km N of Santa María de Dota, 1,800 m, *Standley 43038* (**Herzog 1951** as *Bryopteris tenuicaulis*; **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, Santa María, *Kappelle 2033* (U, **Gradstein 1994**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41724* (**Herzog 1951** as *Bryopteris tenuicaulis*); Dota cantón, Santa María, *Standley 41734* (US, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 42417* (**Herzog 1951** as *Bryopteris fruticulosa*; **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *monoica*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris fruticulosa* subsp. *monoica*); Montañas de Escazú, *Little 5503* (hb. Little, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Moravia cantón, Camino a La Hondura, *Griffin et al. 358* (FLAS, USJ, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Moravia cantón, Cerro Zurquí, *Standley & Valerio 48075* (US, **TYPE** of *Bryopteris filicina* var. *fissiflora*, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'; **Morales 1991** as *Bryopteris liebmaniana*); Moravia cantón, Cerro Zurquí, *Standley & Valerio 48268* (US, **Morales 1991** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Moravia cantón, Cerro Zurquí, *Standley & Valerio 48280* (**Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'; **Morales 1991** as *Bryopteris liebmaniana*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley & Valerio 48628* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48075*, *48092* (**Herzog 1951** as *Bryopteris trinitensis*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48082*, *48090* (**Herzog 1951** as *Bryopteris flaccida*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48268* (**Herzog 1951**); Pérez Zeledón cantón, San Gerardo de Rivas, *Quesada 1349* (CR, **Dauphin 2005**); S. loc., *Brenes 19013* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Morales 1991** as *Bryopteris trinitensis*); S. loc., *Holz & Schäfer-Verwimp CR 99-235*, *CR 99-1127* (**Hartmann et al. 2006**); S. loc., *Polakowsky* (**Polakowsky 1879**); S. loc., Jul 1875, *Polakowsky 297* (**Polakowsky 1877**).

PANAMA. S. loc. (Verdoorn 1931 as *Bryopteris tenuicaulis*; Fulford 1987 as *Bryopteris trinitensis*; Fulford and Sharp 1990 as *Bryopteris flaccida*, *Bryopteris fruticulosa*, *Bryopteris* '*liebmanniana*,' and *Bryopteris trinitensis*; Lücking 1995; Stotler et al. 1998 as *Bryopteris fruticulosa* subsp. *fruticulosa*; Oliveira-e-Silva and Yano 2000); S. loc., *Gradstein* (**Nagashima et al. 1994**); S. loc., *Taylor 1104*, *1105*, *1106* (hb. Fulford, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Troll 47* (PC, **Bischler 1965** as *Bryopteris tenuicaulis*); S. loc., *Willis 134* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*). CHIRIQUÍ: Boquete distrito, Dexter's Brook, *Cornman 3081* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris* '*liebmanniana*'; **Stotler et al. 1998** as *Bryopteris liebmaniana*); Boquete distrito, Dexter's trail to the divide, *Cornman 3093* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*); Boquete distrito, Dexter's trail to the divide, *Cornman 3095* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Boquete distrito, Holcomb Trail, *Cornman 3136*, *3178* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Boquete distrito, Plateau above Boquete, *Cornman 3162* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*); David, *Hélion* (NY, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Gradstein 1994**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle & Aranda 1.39* (NY, PMA, U, **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Gonzáles 65* (**Hartmann et al. 2006**); Tierras Altas distrito, El Hato, *Stern & Chambers 69 p.p.*, *74 p.p.* (Y, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Tierras Altas distrito, N of Audubon Cabin, *Croat 13616A* (MO, U, **Gradstein 1994**). COCLÉ: Antón distrito, above El Valle, *Gentry 5673* (MO, **Stotler et al. 1998** as

Bryopteris liebmaniana); Antón distrito, El Valle de Antón, *Brako 8435* (NY, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Antón distrito, El Valle, along Río Indio, 500–700 m, *Dodge & Hunter 413* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Stotler et al. 1998** as *Bryopteris flaccida*); Antón distrito, El Valle, Río Antón, ~500 m, *Dodge & Hunter 421* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); La Pintada distrito, El Copé, *Knapp & Dressler 3475* (MO, **Stotler et al. 1998** as *Bryopteris trinitensis*), *Salazar Allen et al. 1491* (PMA, NY, **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *663*, *664*, *etc.* (PMA, **Sierra et al. 2019a**); La Pintada distrito, road Llano Grande-Coclesito km 7, *Antonio 1385*, *1401* (MO, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*). COLÓN: Colón, Juan Mina, Chagres River, *Bartlett & Lesser 16870* (MICH, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Colón distrito, Nuevo Limón, *Maxon 6869* (US, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*); Colón distrito, Quebrada Bonita, 70–80 m, 27 Dec 1934, *Steyermark & Allen 17204*, det. Dauphin May 2017 (MO-513409 http://tropicos.org/specimen/90076799, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Colón distrito, Quebrada Salamanca, 70 m, *Dodge et al. 17023*, *17027* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Bryopteris fruticulosa* subsp. *fruticulosa*); Cerro Pirre, *Salazar Allen & Gradstein 9211*, *9244* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Chepigana distrito, Cerro Sapo, *Hammel 1247*, *7296* (MO, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Pinogana distrito, ~20 km SSW of Boca de Cupé, ~200 m, *Allen 8656*, *8689* (MO, NY, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa* and *Bryopteris liebmaniana*); Pinogana distrito, Cruce de Mono, *Allen 8634* (MO, **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc., *Gentry M-9* (MO, **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*). LOS SANTOS: Las Tablas distrito, Península de Azuero, Cerro Canajagua, 950 m, *Troll*, det. C, F, MO, NY, PR, S-PA, US, W, hb. Fulford (**Stotler and Crandall-Stotler 1974** as *Bryopteris trinitensis*; **Stotler et al. 1998** as *Bryopteris trinitensis*; **Gradstein 1994**); S. loc., *Troll* (NY, U, **Stotler et al. 1998** as *Bryopteris trinitensis*). NASO TJËR DI COMARCA: Hydroelectric Project Teribe, 2,000 m, *Mendoza 1610* (PMA, NY, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris liebmaniana*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003); La Chorrera distrito, Barro Colorado Island, *Willis 5a*,*b*,*c* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); La Chorrera distrito, Barro Colorado Island, in Gatún Lake, ~120 m, *Standley 40883* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Dauphin et al. 2022**); Las Cascadas, *Dodge & Hunter* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Panamá distrito, Pedro Miguel, *Cornman 3031* (F, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); S. loc. (He et al. 2016). PANAMA: Capira distrito, Cerro Campana, *Crosby 4359* (MO, **Stotler et al. 1998** as *Bryopteris trinitensis*); Capira distrito, Cerro Campana, *Garibaldi 140* (PMA, **Stotler et al. 1998** as *Bryopteris trinitensis*), *Salazar Allen & Gradstein* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Capira distrito, Cerro Campana, *Stimson 5395*, *5417* (US, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Chepo distrito, Sabana, 30 m, *Dodge & Hunter 416* (MO, **Stotler and Crandall-Stotler 1974** as *Bryopteris flaccida*; **Stotler et al. 1998** as *Bryopteris flaccida*); S. loc., *Lewis et al. 3273* (MO, **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*). VERAGUAS: Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Boca Grande, 7°22′13.6′N, 81°39′26.9″W, 1995–1996, *Galdames 3725*, *3727* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), camino que va hacia la cabecera del Río Negro, a la izquierda del campamenio San Juan Viejo, 7°25′27.9′N, 81°44′10.4″W, 1995–1996, *Aranda 2458* (MA, PMA, **Salazar Allen and Chung 1997a**); Santa Fe distrito, Calovébora, *Nordenskiold* (S, **Stotler and Crandall-Stotler 1974** as *Bryopteris fruticulosa* subsp. *fruticulosa*; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Santa Fe distrito, Cerro Tute W of Santa Fe, *Knapp & Sytsma 2477* (MO, U, **Gradstein 1994**; **Stotler et al. 1998** as *Bryopteris fruticulosa* subsp. *fruticulosa*); Soná distrito, Región de Bahía Honda, Río Limón cerca de la cascada, Jan 2002, *Salazar Allen et al. 20500* (PMA, **Salazar Allen and Chung 2003**, **2006**).

Also found in Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Calycularia Mitt., *J. Proc. Linn. Soc., Bot.* 5(18): 122, 1860 (Mitten 1860a).

Calycularia crispula Mitt., *J. Proc. Linn. Soc., Bot.* 5(18): 122, 1861 (Mitten 1860a). Type: India.

COSTA RICA. S. loc. (Düll 1999; Gradstein et al. 2001b; Singh et al. 2016; Stotler and Crandall-Stotler 2017). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al.

2007); Pan-American Highway Sur, km 93, 9°36′N, 83°50′W, 3,000 m, 11 Feb 2018, *Dauphin & Ramírez 2257* (CR, **Dauphin et al. 1998**; **Dauphin 2005**).

Also reported from Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Mexico.

Calypogeia Raddi, *Jungermanniogr. Etrusca*: 31, 1818 (Raddi 1818b).

Calypogeia andicola Bischl., *Candollea* 18: 79, 1962 (Bischler 1962c). Type: Colombia.

COSTA RICA. CARTAGO: Cordillera de Talamanca, Páramo Buenavista, 3,400 m, *Dauphin 2917* (NY http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1430808). **Dauphin 2005**).

Also reported from Western South America, Brazil.

Calypogeia densifolia (Steph.) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 676 (=*Sp. Hepat. [Stephani]* 3: 408), 1908 (Stephani 1908g).

≡*Kantius densifolius* Steph., *Hedwigia* 34(2): 52, 1895 (Stephani 1895a). Type: Brazil.

≡*Calypogeia lechleri* var. *densifolia* (Steph.) Bischl., *Candollea* 18: 101, 1962 (Bischler 1962b).

COSTA RICA. GUANACASTE: Liberia cantón, Guanacaste National Park, Pitilla, *Dauphin 1914* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, sendero al Río Java, 1,000 m, *Dauphin 1705* (CR, **Dauphin 2005**).

Also reported from Western South America, Brazil.

Calypogeia grandistipula (Steph.) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 669 (=*Spec. Hepat. [Stephani]* 3: 401), 1908 (Stephani 1908g).

≡*Kantius grandistipulus* Steph., *Hedwigia* 34(2): 52, 1895 (Stephani 1895a). Type: Brazil.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006 as *Calypogeia* cf. *grandistipula*). Note: We are not aware of any positively identified specimen from Guatemala.

PANAMA. VERAGUAS: Close to river Calovébora, area of El Guabal, *Salazar Allen 380* (PMA, **Stotler et al. 1998**).

Also reported from Northern South America, Western South America, Brazil, Southern South America.

Calypogeia laxa Gottsche et Lindenb., *Syn. Hepat.* 5: 713, 1847 (Gottsche et al. 1847). Type: Mexico.

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990). ALTA VERAPAZ: Cobán municipio, N of Cobán, *Sharp 2972* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); Cobán, 1,350 m, *Türckheim* (NY, BM, **Stephani 1908g**). BAJA VERAPAZ: S. loc., 4,100 ft (1,250 m), *Sharp 5178 p.p.*, *5242* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). IZABAL: S. loc., *Jones & Facey 3351* (NY, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. CAYO: Helicopter Pad G995, ~0.6 km SW of Fork Camp, 16°31′N, 89°04′W, 4 Dec 1993, *Allen 15055*, det. Whittemore 1994 (BRH, MO-4421598, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15247* (BRH, MO, **Whittemore and Allen 1996**); Southern Maya Mountains, Doyle's Delight, 16°29′N, 89°02′W, 1,000 m, 13 Dec 1993, *Allen 15491*, det. Whittemore 1994 (MO-4421597! https://tropicos.org/specimen/90019397, **Whittemore and Allen 1996**); same location, *Allen 15085*, det. Whittemore 1994 (BRH, MO-3981776, **Whittemore and Allen 1996**); same location, *Allen 15105*, det. Dauphin May 2017 (MO-3981776! http://tropicos.org/specimen/90019399, **Whittemore and Allen 1996**); same location, *Allen 15370*, det. Dauphin May 2017 (MO-3981775! http://tropicos.org/specimen/90019400, **Whittemore and Allen 1996**).

COSTA RICA. S. loc. (Cole 1983). ALAJUELA: Poás National Park (Dauphin 2005); Poás Volcano, 31 Jul 1977, *Griffin & Araya 90* (USJ, **Morales and Griffin 1983**; **Morales 1991**). CARTAGO: El Guarco cantón, Casa Mata, *Mata 48* (USJ, **Dauphin 2005**). PUNTARENAS: Monteverde cantón, NE from Biological Station, 10°18′N, 84°48′W, 1,500 m, 24 Mar 1992, *Lyon 456*, det. Dauphin May 2017 (MO-4412799! https://tropicos.org/specimen/90050823, **this publication**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, 2,500 m, *Dauphin 3405* (CR, **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Calypogeia lechleri (Steph.) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 680 (=*Spec. Hepat. [Stephani]* 3: 412), 1908 (Stephani 1908g).

≡*Kantius lechleri* Steph., *Hedwigia* 34(2): 53, 1895 (Stephani 1911a). Lectotype: Peru.

GUATEMALA. ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *CAYO: Southern Maya Mountains, Doyle's Delight, 16°30′N, 89°03′W, 5 Dec 1993, *Allen 15105*, det. Dauphin May 2017 (MO-3981776! http://tropicos.org/specimen/90019399, **this publication**); same location, *Allen 15370*, det. Dauphin May 2017 (MO-3981775! http://tropicos.org/specimen/90019400, **this publication**).

COSTA RICA. S. loc. (Bischler 1962b). CARTAGO: Paraíso cantón, Orosi, 1,000 m, 30 Mar 1924, *Standley 39843* (JE-04001641, JE-04001642, B-20831, **Bischler 1962b** as *Calypogeia lechleri* var. *lechleri*). *PUNTARENAS: Coto Brus cantón, lindero SE Reserva Coto Brus-Guaymí, 1,400–1,500 m, 16 Oct 1993, *Dauphin et al. 753*, det. G. Dauphin Dec 2020 (USJ-59452!, **this publication**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009,

Schäfer-Verwimp & Verwimp 34224/A (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9273*, *9274* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014).

Also reported from Northern South America, Western South America, Brazil, Southern South America.

Calypogeia miquelii Mont. ex Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 200, 1845 (Gottsche et al. 1845b). Type: Suriname.

***HONDURAS.** *ATLÁNTIDA: Along stream entering Rio Bonito at confluence camp, 15°40′N, 86°51′W, 25 Apr 1996, *Allen 17609*, det. Whittemore 1996 (MO-4428675! http://tropicos.org/specimen/90039803, **this publication**); El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 20 Apr 1996, *Allen 17414*, det. Whittemore 1996 (MO-4428676! http://tropicos.org/specimen/90039804, **this publication**).

COSTA RICA. GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1887* (CR, **Dauphin 2005**). PUNTARENAS: Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, 300–400 m, *Gradstein & Dauphin 9318* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, trail to Cerro Chocuaco, 300–400 m, *Gradstein & Dauphin 9319* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. *COLÓN: Colón distrito, near top of hill on N side of Gamboa, 9°07′30″N, 79°42′10″W, 175 m, 18 Aug 1973, *Nee 6527*, det. Dauphin May 2017 (MO-6230304! https://tropicos.org/specimen/100366528, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9231* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15091* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3163* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, in Gatún Lake, ~120 m, *Standley 40883* (F, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Barbour Point, 2003, *Dauphin 3155* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3074* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Standley, 2003, *Dauphin 3118* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Isla Canales de Tierra, Sendero Punta, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 20143* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero de Manglarito hacia Playa Limón, Jan 2002, *Salazar Allen et al. 20336*, *20421* (PMA, **Salazar Allen and Chung 2003, 2006**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Calypogeia peruviana Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 47, 1838 (Montagne 1838). Type: Peru.

=*Kantius heterophyllus* Steph., *Hedwigia* 34(2): 35, 1895 (Stephani 1911a). Type: Brazil.

≡*Calypogeia heterophylla* (Steph.) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 67 (=*Spec. Hepat. [Stephani]* 3: 407), 1908 (Stephani 1908g).

=*Calypogeia subrotunda* Steph., *Biblioth. Bot.* 87(2): 223, 1916 (Stephani 1916b), syn. fide Fulford (1968). Type: Bolivia.

≡*Calypogeia heterophylla* var. *subrotunda* (Steph.) Bischl., *Candollea* 18: 69, 1962 (Bischler 1968).

GUATEMALA. S. loc. (Pagán 1942b; Bonner 1963a; Schuster 1969a; Freire et al. 2012); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1908g**). ALTA VERAPAZ: Cobán municipio, Chicoyonito, 4,400 ft (1,341 m), Dec 1885, *Türckheim 1* (G, **Bischler 1962c**; **Fulford 1968**; **Freire 2006**); Finca Bucaral, *Sharp 2765 p.p.* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); Pansamala, 3,800 ft (1,158 m), *Türckheim* (BM, G, NY, S, Y, **Fulford 1968**); Pansamala, 3,800 ft (1,158 m), 30 Jan 1886, *Türckheim 12* (G [Nos. 1837, 1838, 1841], BM, NY, S, Y, **Bischler 1962c**; **Freire 2006**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Pérez 162* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 104*, *145*, *147*, *etc.* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); Purhulhá municipio, Civija, 4,100 ft (1,250 m), *Sharp 5200 p.p.*, *5219* (TENN, **Fulford 1968**; **Freire 2006**). EL PROGRESO: Between Calera and summit of Volcán Siglo, 2,000–3,000 m, *Steyermark 43057* (F, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**); summit of Volcán Santa Luisa, 2,000–3,000 m, *Steyermark 43513* (F, **Fulford 1968**; **Freire 2006**). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1400* (USCG, Pérez 2009). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUETZALTENANGO: San Carlos Sija municipio, Cerro de Sija, 9,500 ft (2,896 m), *Sharp 22195049* (TENN, **Fulford 1968**; **Freire 2006**); San Carlos Sija municipio, Cerro de Sija, 10,000 ft (3,048 m), *Sharp 5050 p.p.* (TENN, **Freire 2006**; **Pérez 2009**); San Carlos Sija municipio, Cerro de Sija, *Sharp 5059* (TENN, **Fulford 1968**). QUICHÉ: Uspantán, 15°27′23.7″N, 90°47′58.9″W, 2,365 m, 2007, *Pérez et al. 2340* (USCG, Pérez 2009). SAN MARCOS: Tajamulco municipio, slope of Tajumulco, 8,000 ft (2,438 m), *Sharp 5501 p.p.* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); Tajamulco municipio, slope of Tajumulco, 8,000 ft (2,438 m), *Sharp 5503* (TENN, **Fulford 1968**; **Freire 2006**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 10 Dec 1993, *Allen 15333*, det. Dauphin May 2017 (MO-3981762! http://tropicos.org/specimen/90019402, **this publication**; Whittemore and Allen 1996 as *Calypogeia lophocoleoides*). *TOLEDO: Columbia River Forest Reserve, Camp 1, 16°22′59″N, 89°07′18″W, 12 Feb 1997, *Allen 18604*, det. Dauphin May 2017 (MO-5228096! http://tropicos.org/specimen/90101526, **this publication**); Columbia River Forest Reserve, Camp 2, 16°23′17″N, 89°05′30″W, 14 Feb 1997, *Allen 18714*, det. Whittemore 1997 (MO-4417016! http://tropicos.org/specimen/90046816, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 950 m, 19 Feb 1997, *Allen 18907*, det. Dauphin May 2017 (MO-5228095! http://tropicos.org/specimen/90101525, **this publication**).

HONDURAS. COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 1740–2,040 m, 12 Mar 1993, *Allen 13898*, det. Dauphin May 2017 (MO-5232337! https://tropicos.org/specimen/90102259, **this publication**); Ojos de Agua municipio, E of Ojos de Agua, *Standley 4814*, *4835 p.p.* (F, **Fulford 1968**); Siguatepeque municipio, El Achote, *Yuncker 6552*, *6640* (DPU, **Fulford 1968**). CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 1,500 m, 18 Mar 1993, *Allen 14120*, det. Dauphin May 2017 (MO-5232336! https://tropicos.org/specimen/90102260, **this publication**); slopes of Cerro de Nyerca, *Standley 759* (F, **Fulford 1968**). EL PARAÍSO: El Paraíso municipio, El Zamorano, *Standley 43630* (F, **Fulford 1968**). *LEMPIRA: Gracias municipio, Montaña de Celaque, along Rio Arcagual, and ridge to summit of Cerro La Castilla, 14°33′N, 88°41′W, 2,480–2,827 m, 17 Nov 1991, *Allen 11540*, det. Whittemore 1992 (MO-3965019! https://tropicos.org/specimen/101212788, **this publication**).

***EL SALVADOR.** *SANTA ANA: Trail up to the top of Monte Cristo, 26 Oct 1977, *Watson ES-0016*, det. Whittemore (MO-3679000!, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 5474a* (U, **Kappelle 1996**); S. loc. (Bischler 1962c as *Calypogeia heterophylla*; Bonner 1977 as *Calypogeia heterophylla* var. *subrotunda*; Cole 1982 also as *Calypogeia subrotunda*, 1983 also as *Calypogeia subrotunda*; Dauphin 2005; Gradstein and Holz 2005). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás Volcano, *Griffin & Araya 7*, *15*, *33*, *74*, *170* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 31 Jul 1977, *Griffin & Araya 78*, *91* (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 33* (FLAS-020498, **Morales and Griffin 1983**); San Ramón cantón, Los Ángeles, *Brenes 15110*, *15119 p.p.* (F, **Fulford 1968**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Paraíso cantón, Orosi, Tapantí, *Griffin & Morales 170* (USJ, FLAS, **Dauphin 2005**; **Morales 1991**). PUNTARENAS: Cerro Estaquero, 3,200 m, *Gómez-Pignataro 19548*, det. Dauphin May 2017 (MO-6230303! https://tropicos.org/specimen/100366529, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, 8 km sur de El Empalme, *Little 5643b*, *8671d* (hb. Little, **Fulford 1968**; **Morales 1991**; **Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41094* (**Herzog 1938** as *Calypogeia subrotunda*); Dota cantón, Santa María, *Standley 41694* (B-20558, **Morales 1991**; **Dauphin 2005**); Dota cantón, Santa María, *Standley 48694* (hb. Herzog, S, **Bischler 1962c** as *Calypogeia heterophylla* var. *subrotunda*; **Fulford 1968**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Griffin & Morales A59* (USJ, FLAS, **Morales 1991**); Moravia cantón, La Palma, 1,556 m, *Pittier 48694* (G, **Fulford 1968**); Moravia cantón, La Palma, 1,550 m, *Pittier 6018a* (G, **Bischler 1962c** as *Calypogeia heterophylla* var. *heterophylla* f. *heterophylla*; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Dam, 13 Sep 1977, *Folsom et al. 5405C*, det. Whittemore 1990 (MO-2843194!, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000 m, *Salazar Allen et al. 615b* (PMA, **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, *Stotler & Crandall-Stotler 3498* (ABSH, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34234/A* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9304* (PMA, **Stotler et al. 1998**); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9305* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); ridge trail above Cana to Pirre Massif, 800–900 m, 5 May 1990, *Allen 8986*, det. Whittemore 1990 (MO-3678077, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Calypogeia rhombifolia (Spruce) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 667 (399), 1908 (Stephani 1908g).

≡*Kantius rhombifolius* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 413, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. PUNTARENAS: Coto Brus, 1,550 m, *Dauphin 1726* (CR, **Dauphin 2005**); Monteverde cantón, Monteverde

Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9409 p.p.* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 279* (PMA, **Dauphin 2007**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Calypogeia subintegra (Gottsche, Lindenb. et Nees) Bischl., *Candollea* 18: 75, 1962 (Bischler 1962b).

≡*Calypogeia peruviana β subintegra* Gottsche, Lindenb. et Nees, *Syn. Hepat.* 5: 712, 1847 (Gottsche et al. 1847). Type: Mexico.

***BELIZE.** *CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 10 Dec 1993, *Allen 15345A*, det. Dauphin May 2017 (MO-3981763! http://tropicos.org/specimen/90019401, **this publication**; Whittemore and Allen 1996, erroneously as *Calypogeia lophocoleoides*).

***HONDURAS.** *COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 11 Mar 1993, *Allen 13821*, det. Dauphin May 2017 (MO-5232334! http://tropicos.org/specimen/90102262, **this publication**). *FRANCISCO MORAZÁN: Distrito Central municipio, La Tigre National Park, 14°07–19′N, 87°03–07′W, 26 May 1992, *Allen 12350*, det. Dauphin May 2017 (MO-3968249! http://tropicos.org/specimen/101212966, **this publication**). *OCOTEPEQUE: La Labor municipio, Montana del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 24 Mar 1993, *Allen 14518*, det. Dauphin May 2017 (MO-5232338! http://tropicos.org/specimen/90102258, **this publication**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013). CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3496* (ABSH, **Stotler et al. 1998**). *NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, 1,200–1,500 m, 13 Mar 1976, *Croat 33224*, det. Dauphin May 2017 (MO-5274400! https://tropicos.org/specimen/90132406, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Calypogeia uncinulatula Herzog, *Hedwigia* 67(6): 250, 1927 (Herzog 1927). Type: Brazil.

GUATEMALA. S. loc. (Gradstein 2021). BAJA VERAPAZ: Purhulhá municipio, Civija, 4,000 ft (1,219 m), *Sharp 5183* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). EL PROGRESO: Calera, Volcán Siglo, 2,000–3,000 m, *Steyermark 43057* (F, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). QUETZALTENANGO: Chiquival, 7,700 ft (2,347 m), *Sharp 2082* (TENN, **Fulford 1968**; **Freire 2006**); Quetzaltenango municipio, Volcán Santa María, 1,300–1,500 m, *Steyermark 33659* (F, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); Zunil municipio, Volcán Zunil, *Standley 85970* (F, **Fulford 1968**; **Freire 2006**). SAN MARCOS: Barranco, Eminencia, 2,500–2,700 m, *Standley 86462* (F, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); San Pablo municipio, El Porvenir, slope of Tajumulco, 8,000 ft (2,438 m), *Sharp 5501* (TENN, **Fulford 1968**; **Freire 2006**).

***BELIZE.** *CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 10 Dec 1993, *Allen 15370*, det. Dauphin May 2017 (MO-3981775! http://tropicos.org/specimen/90019400, **this publication**; Whittemore and Allen 1996a as *Calypogeia laxa*).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, calle a Los Planes, 12 Nov 2014, *Búcaro H345*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. S. loc. (Cole 1983). ALAJUELA: Poás Volcano, 30–31 Jul 1977, *Griffin & Araya 54* (USJ, FLAS, Morales and Griffin 1983 as *Calypogeia* aff. *uncinulatula*; **Morales 1991** as *Calypogeia uncinulatula*; **Dauphin 2005**).

Also reported from Northern South America, Western South America, Brazil.

***Caudalejeunea* Schiffn., *Hepat. (Engl.-Prantl)*: 129, 1893 (Schiffner 1893a).**

Caudalejeunea lehmanniana (Gottsche) A.Evans, *Bull. Torrey Bot. Club* 34(11): 554, 1908 (Evans 1907b).

≡*Lejeunea lehmanniana* Gottsche, *Syn. Hepat.* 3: 325, 1845 (Gottsche et al. 1845a). Type: Brazil.

=*Mastigolejeunea dentilobula* Herzog, *Rev. Bryol. Lichénol.* 20(1/2):134, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994): Honduras, Atlántida, Lancetilla Valley, near Tela, 20–600 m, Dec 1927–Mar 1928, *Standley 48775a* [=48775 p.p. on herbarium label] (JE-04001662 https://je.jacq.org/JE04001662).

GUATEMALA. S. loc. (Fulford and Sharp 1990). EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**).

BELIZE. S. loc. (Oliveira-e-Silva and Yano 2000; Bastos 2004). *BELIZE: Mile 24 to 25, Northern Highway, 29 Jan 1974, *Dwyer & Liesner 12046*, det. Dauphin May 2017 (MO-2184623!, **this publication**). *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 8 Dec 1996, *Allen 18139*, det. Whittemore 1997 (MO-4417023! https://tropicos.org/specimen/90046808, **this publication**). ORANGE WALK: Lamanai, 550 m, *Hebda B5* (NY, **Gradstein 1994**); S. loc. (Whittemore and Allen 1996).

HONDURAS. S. loc. (Oliveira-e-Silva and Yano 2000; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley (**Geissler and Bischler 1985** as *Mastigolejeunea dentilobula*); Tela municipio, Lancetilla Valley, 20–600 m, Dec 1927–Mar 1928, *Standley 48755 p.p.* (JE-04001662 https://je.jacq.org/JE04001662, **TYPE** of *Mastigolejeunea dentilobula*); Tela municipio, Lancetilla Valley, 20–600 m, 1928, *Standley* (**Herzog 1951** as *Mastigolejeunea dentilobula*). COPÁN: Copán municipio, Copán Ruinas, *Hape 50949* (US, **Gradstein 1994**).

COSTA RICA. S. loc. (Pagán 1939c; Schuster 1980d; Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Bastos 2004); S. loc., *Standley 48775 p.p.* (**Herzog 1951** as *Mastigolejeunea dentilobula*; **Geissler and Bischler 1985** as *Mastigolejeunea dentilobula*); S. loc., *Tonduz* (**Evans 1907b**). PUNTARENAS: Golfo Dulce, *Taylor 253* (CINC, **Morales 1991**); Osa cantón, Santo Domingo de Golfo Dulce, *Taylor 39-753* (AHFH, MICH, CINC, **Steere 1946**; **Crandall 1969**; **Dauphin 2005**); Osa cantón, Santo Domingo de Golfo Dulce, *Tonduz 15601* (G, **Gradstein 1994**).

PANAMA. S. loc. (Oliveira-e-Silva and Yano 2000; Bastos 2004). COCLÉ: La Pintada distrito, El Copé, *Meijer 173* (PMA, **Stotler et al. 1998**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 208* (PMA, **Stotler et al. 1998**); Cerro Pirre, 1,300 m, *Salazar Allen & Gradstein 9308* (PMA, **Stotler et al. 1998**); Cerro Pirre, between Pirre 1 and Pirre 2, 50 m, *Salazar Allen & Gradstein 9208* (PMA, **Stotler et al. 1998**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15071*, *15097* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Machado 32* (NY, **Gradstein 1994**; **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Barbour trail 900, 9 Feb 1969, *Croat 7799*, det. Dauphin May 2017 (MO-5280880! https://tropicos.org/specimen/90136958, **this publication**); La Chorrera distrito, Barro Colorado Island, Camino Balboa, *Salazar Allen 4346a* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Wheeler 4–5, *Salazar Allen 4741* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Wetmore 15–16, *Salazar Allen 5959* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Wetmore trail 15–16, *Salazar Allen et al. 5959* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3055* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Soná distrito, Región de Bahía Honda, Playa Bejucosa-Limón, Jan 2002, *Salazar Allen et al. 20258* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero hacia Playa El Edén, Jan 2002, *Salazar Allen et al. 20472* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero hacia Playa El Edén, Jan 2002, *Salazar Allen et al. 20475* (PMA, **Salazar Allen and Chung 2003, 2006**).

***COCOS I.** Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 25 Jan 1990, *Dauphin 1054 p.p.*, det. G. Dauphin Jan 2021 (USJ-47222!, CR-4468294!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 26 Jan 1994, *Dauphin 1054 p.p.*, det. G. Dauphin Jan 2021 (USJ-47222!, **this publication**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

***Cephalozia* (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 18, 1835 (Dumortier 1835).**

Cephalozia bicuspidata (L.) Dumort., *Recueil Observ. Jungerm.*: 18, 1835 (Dumortier 1835), subsp. ***bicuspidata***.

≡*Jungermannia bicuspidata* L., *Sp. Pl.* 1: 1132, 1753 (Linnaeus 1753). Type: Europe.

GUATEMALA. S. loc. (Schuster 1974; Gradstein and Váňa 1987; Fulford and Sharp 1990; Damsholt 2002, 2013; Linares and Uribe 2002); S. loc., *Godman & Sabin* (NY, **Fulford 1968**; **Freire 2006**). QUETZALTENANGO: Above Chiquival, 7,500 ft (2,286 m), *Sharp 2024 p.p.*, *2050* (TENN, **Fulford 1968**; **Freire 2006**); Las Nubes, 2,500 m, *Standley 85141* (F, **Fulford 1968**; **Freire 2006**); San Carlos Sija municipio, Gatena area, N of Sija, 9,500 ft (2,896 m), *Sharp 2206*, *2225*, *2229*, *2242* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). SAN MARCOS: N of Palestina, 9,000 ft (2,743 m), *Sharp 2606* (TENN, **Fulford 1968**); N of Palestina, 9,000 ft (2,743 m), 16 Feb 1945, *Sharp 2633* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). TOTONICAPÁN: E of Totonicapán, *Sharp 2606* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**).

COSTA RICA. S. loc. (Dauphin et al. 2011). ALAJUELA: Poás Volcano, 17 Sep 1972, *Morales & Lacayo 528* (USJ, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Las Pailas, *Dauphin 1860* (CR, **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Siberia, Russian Far East, Caucasus, Western Asia, China, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico, Western South America, Southern South America.

Cephalozia crossii Spruce, *Cephalozia*: 46, 1882 (Spruce 1882). Type: Colombia.

=*Cephalozia dussii* Fulford, *Mem. New York Bot. Gard.* 11(3): 321, 1968 (Fulford 1968), syn. fide Gradstein (1999a). Type: Guadeloupe.

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, along Rio Arquegual, 7.5 km SW of Gracias, 14°34′N, 88°39′W, Gracias municipio, 1,400 m, 11 Nov 1991, *Allen 11129*, det. Whittemore 1992 (MO-3695025! http://tropicos.org/specimen/101212641, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Ellis et al. 2018a). ALAJUELA: Poás Volcano, *Morales & Canessa 437* (**Morales 1991**; **Dauphin 2005**); Poás Volcano, 10 Jun 1968, *Morales & Canessa 437* (**Morales and Griffin 1983** as *Cephalozia dussii*). CARTAGO: Pan-American Highway km 93, *Dauphin & Ramírez 2251* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Fila Pittier, *Dauphin 1413B* (CR, **Dauphin 2005**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, *Dauphin 3394* (CR,

Dauphin 2005); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9726* (USJ, **Gradstein et al. 1994**); S. loc., *Schäfer-Verwimp & Holz SV/H-0255* (M, **Feldberg et al. 2016, 2017**).

Also reported from Macaronesia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cephaloziella (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 98, 1893 (Schiffner 1893a).

Cephaloziella divaricata (Sm.) Schiffn., *Hepat. (Engl.-Prantl)*: 99, 1893 (Schiffner 1893b).

≡*Jungermannia divaricata* Sm., *Engl. Bot.* 10: table 719, 1800 (Smith and Sowerby 1800). Type: England.

GUATEMALA. S. loc. (Gradstein and Váňa 1987). ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Cephaloziella* cf. *divaricata*); Tucurú, Chelemhá II, Cultivo arriba de la Ermita, 15°22′32″N, 90°05′05″W, 2,050 m, *Pérez 85* (USCG, Pérez 2009).

***HONDURAS.** *COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 11 Mar 1993, *Allen 13802*, det. Dauphin May 2017 (MO-5227626! http://tropicos.org/specimen/90096770, **this publication**). *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 12 May 1992, *Allen 12003*, det. Dauphin May 2017 (MO-5227636! http://tropicos.org/specimen/90096761, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 6 Feb 1969, *Griffin et al. D190* (FLAS, USJ, MO-2846628, **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre, 2,000 m, 5 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0510* (CR, PRC, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**); Pérez Zeledón cantón, Chirripó National Park, Valle de Los Conejos, *Kuhbier 603* (B-225760, **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Middle Atlantic Ocean, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, New Zealand, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cephaloziella fragillima (Spruce) Fulford, *Mem. New York Bot. Gard.* 11(4): 409, 1976 (Fulford 1976).

≡*Cephalozia fragillima* Spruce, *Mem. Torrey Bot. Club* 1(3): 131, 1890 (Spruce 1890). Type: Bolivia.

=*Cephalozia granatensis* J.B.Jack ex Steph., *Bull. Herb. Boissier*, sér. 2, 8(7): 500 (=*Spec. Hepat. [Stephani]* 3: 330), 1908 (Stephani 1908a), syn. fide Gradstein (2021). Type: Colombia.

≡*Cephaloziella granatensis* (J.B.Jack ex Steph.) Fulford, *Mem. New York Bot. Gard.* 11(4): 411, 1976 (Fulford 1976).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 500–1,550 m, 20 Apr 1996, *Allen 17387*, det. Dauphin May 2017 (MO-6236049! http://tropicos.org/specimen/100371090, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a as *Cephaloziella granatensis*; Dauphin 2005 as *Cephaloziella granatensis*; Gradstein and Holz 2005 as *Cephaloziella granatensis*; Schäfer-Verwimp and Pócs 2009 as *Cephaloziella granatensis*). ALAJUELA: Poás Volcano, 31 Jul 1977, *Griffin & Araya 77* (USJ, FLAS, **Morales and Griffin 1983** as *Cephaloziella granatensis*; **Morales 1991** as *Cephaloziella granatensis*; **Dauphin 2005** as *Cephaloziella granatensis*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Gradstein 9747* (U, USJ, **Gradstein et al. 1994** as *Cephaloziella granatensis*).

PANAMA. S. loc. (Gradstein 1999a); S. loc., *Dauphin et al. 1548* (GOET, **Feldberg et al. 2013, 2014**, both as *Cephaloziella granatensis*); BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014 as *Cephaloziella granatensis*). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30925* (JE, **Schäfer-Verwimp 2014** as *Cephaloziella granatensis*). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1548* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Cephaloziella granatensis*; **Dauphin 2007** as *Cephaloziella granatensis*); Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1550* (PMA, **Stotler et al. 1998** as *Cephaloziella granatensis*); Cerro Fábrega, *De Gracia 295* (PMA, **Dauphin 2007**).

Also reported from Macaronesia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cephaloziella hampeana (Nees) Schiffn. ex Loeske, *Moosfl. Harz.*: 92, 1903 (Loeske 1903).

≡*Jungermannia hampeana* Nees, *Naturgesch. Eur. Leberm.* 3: 560, 1838 (Nees 1838b). Type: Germany.

GUATEMALA. S. loc. (Gradstein and Váňa 1987; Fulford and Sharp 1990). QUICHÉ: Nebaj, 6,500 ft (1,981 m), *Sharp 5305* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**); S. loc. (Flores et al. 2017).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, Southern South America.

Cephaloziella subtilis (Lindenb. et Gottsche) Steph., *Hedwigia* 32(5): 318, 1893 (Stephani 1893a).

≡*Jungermannia subtilis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 685, 1847 (Gottsche et al. 1847). Type: Mexico.

COSTA RICA. GUANACASTE: La Cruz cantón, Guanacaste National Park, Sector Santa Elena, Playa Respingue, 10°53′22″N, 85°53′14″W, 0–50 m, 27 Aug 2003, *Dauphin & Grayum 3271*, det. Dauphin (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); La Cruz cantón, Guanacaste National Park, Sector Santa Elena, Playa Respingue, 10°53′22″N, 85°53′14″W, 0–50, 27 Aug 2003, *Dauphin & Grayum 3272*, det. Dauphin (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**).

Also reported from Mexico.

Cephaloziopsis (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 85, 1893 (Schiffner 1893a).

Cephaloziopsis intertexta (Gottsche) R.M.Schust., *Nova Hedwigia* 22: 183, 1972 (Schuster 1971b).

≡*Jungermannia intertexta* Gottsche, *Syn. Hepat.* 1: 107, 1844 (Gottsche et al. 1844). Type: St. Kitts.

≡*Cladopodiella intertexta* (Gottsche) Fulford., *Mem. New York Bot. Gard.* 11(3): 347, 1968 (Fulford 1968).

GUATEMALA. S. loc. (Schuster 1971b; Fulford 1987; León et al. 1998; Linares and Uribe 2002). QUETZALTENANGO: S. loc., *Standley 6027* (F, Pérez 2009 as *Cladopodiella intertexta*); Zunil municipio, Fuentes Georgianas, slopes of Volcán de Zunil, 2,300–2,500 m, *Standley 86027* (F, **Fulford 1968** as *Cladopodiella intertexta*, **1976**; **Freire 2006** also as *Cladopodiella intertexta*; **Pérez 2009**); Zunil municipio, Fuentes Georgianas, slopes of Volcán de Zunil, 2,300–2,500 m, *Standley 86028*, *86052* (F, **Fulford 1968** as *Cladopodiella intertexta*, **1976**; **Crandall 1969** as *Cladopodiella intertexta*; **Freire 2006** also as *Cladopodiella intertexta*).

***HONDURAS.** *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 18 Mar 1993, *Allen 14084*, det. Dauphin May 2017 (MO-5227622! http://tropicos.org/specimen/90096774, **this publication**); San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 18 Mar 1993, *Allen 14108*, det. Dauphin May 2017 (MO-5227623! http://tropicos.org/specimen/90096775, **this publication**); San Pedro Sula municipio, from Rio Cusuco to Cerro Cantiles, 19 Mar 1993, *Allen 14169*, det. Dauphin May 2017 (MO-5227618! https://tropicos.org/specimen/90096778, **this publication**). *YORO: Cordillera Nombre de Dios, N slope between Rio Guán Guán and Quebrada Aguacatal, 15°30′N, 87°28′W, 6 Mar 1993, *Allen 13663*, det. Dauphin May 2017 (MO-5227630! http://tropicos.org/specimen/90096767, **this publication**).

COSTA RICA. ALAJUELA: San Carlos, Volcán Arenal, 14 Dec 1977, *Balász B/77/14/A*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, Nov 2010, *Norris 110080* (UC, **Norris et al. 2017**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Eakin 239* (FLAS, **Morales 1991**, **Dauphin 2005**). GUANACASTE: Liberia cantón, Rincón de La Vieja National park, Las Pailas, *Dauphin 1861* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Fila Cruces, Laguna Gamboa, 8°57′00′N, 83°04′20′W, *Dauphin 1738* (CR, **Dauphin 2005**).

PANAMA. VERAGUAS: Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30799/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea (Spruce) Jack et Steph., *Hedwigia* 31(1): 16, 1892 (Jack and Stephani 1892).

Ceratolejeunea brevinervis (Spruce) A.Evans, *Bull. Torrey Bot. Club* 32(6): 282, 1908 (Evans 1905a).

≡*Lejeunea brevinervis* Spruce, *J. Linn. Soc., Bot.* 30(210): 342, 1895 (Gepp 1895). Type: Guadeloupe, Dominica.

?GUATEMALA. ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Ceratolejeunea* aff. *brevinervis*). Note: We are not aware of any positively identified specimen from Guatemala.

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 968 p.p.*, det. G. Dauphin Jan 2021 (USJ-47226!, CR-4468154!, **this publication**).

Also reported from the Caribbean, Western South America.

Ceratolejeunea ceratantha (Nees et Mont.) Schiffn., *Bot. Jahrb. Syst.* 23(5): 582, 1897 (Schiffner 1897).

≡*Lejeunea ceratantha* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 335, 1840 (Montagne 1840). Type: French Guiana.

***HONDURAS.** *COMAYAGUA: San Juanillo, Cordillera de Montecillos Biological Reserve Forest, 14°30′N, 87°53′W, 1,700–2,000 m, 3 Jun 1993, *Liesner 26780*, det. Dauphin May 2017 (MO-5227805! http://tropicos.org/specimen/801992, **this publication**).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4485 p.p.* (PMA, **Dauphin et al. 2015**).

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea coarina (Gottsche) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

≡*Lejeunea coarina* Gottsche, *Syn. Hepat.* 3: 395, 1845 (Gottsche et al. 1845a). Type: Brazil.

=*Lejeunea plumula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 201, 1884 (Spruce 1884), syn. fide Dauphin (2003). Type: Brazil.

≡*Ceratolejeunea plumula* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 433, 1913 (Stephani 1913).

***BELIZE.** *TOLEDO: Punta Gorda, *White 54*, det. Dauphin May 2017 (MO-5247759! http://tropicos.org/specimen

/90121015, **this publication**); Punta Gorda, Feb 1963, *White 86*, det. Dauphin May 2017 (MO-5247574!, **this publication**).

HONDURAS. S. loc. (Schäfer-Verwimp and Pócs 2009). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54841* (B, JE, **Dauphin 2000, 2003**).

*__NICARAGUA.__ *ATLÁNTICO NORTE: Siuna municipio, trail from Cerro El Inocente toward Cerro Saslaya, 13°46′N, 85°00–01′W, 8 Mar 1978, *Stevens 6730 p.p.*, det. Dauphin May 2017 (MO-6699909! http://tropicos.org/specimen/100988663, **this publication**). *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, top and N slope of steep ridge SW of finca El Cielo, S of Rio Gusaneras, 13°15′N, 85°42′W, 16 Jan 1979, *Stevens 11626 p.p.*, det. Dauphin May 2017 (MO-6699921! http://tropicos.org/specimen/100988643, **this publication**).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Bastos 2004; Schäfer-Verwimp and Pócs 2009). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110166b* (UC, **Norris et al. 2017**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 32173*, *91-88*, *92-218*, *etc.* (hb. Lücking, GOET, ULM, **Lücking 1995, 1997**, both as *Ceratolejeunea plumula*; **Dauphin et al. 1998** as *Ceratolejeunea plumula*; **Dauphin 2000, 2003, 2005**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008** as *Ceratolejeunea plumula*); Osa cantón, Rincón, trail Boscosa to Cerro Chocuaco, 480 m, *Gradstein & Dauphin 9315* (GOET, **Dauphin 2000, 2003, 2005**). *SAN JOSÉ: Moravia cantón, trail from La Ventana to Rio Hondura, 10°04′20″N, 84°59′00″W, 4 Sep 1990, *Kennedy & Solomon 5493*, det. Dauphin May 2017 (MO-5626890!, **this publication**).

PANAMA. *BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4616*, det. Dauphin Aug 2017 (PMA, **this publication**). COCLÉ: La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,200 m, *Salazar Allen & Villarreal 19031* (PMA, **Dauphin et al. 2006**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 686*, *701*, *715*, *etc.* (PMA, **Sierra et al. 2019a**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Bay East from Gross 5, 2003, *Dauphin 3173* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3072* (CR, PMA, **Dauphin et al. 2022**). *PANAMA: Panamá distrito, Cerro Jefe, 4 Jan 1970, *Lewis 7608*, det. Dauphin May 2000 (MO-5139408!, **this publication**).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 456* (ULM, **Bernecker-Lücking 2000** as *Ceratolejeunea plumula*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 462*, *471* (USJ, **Bernecker-Lücking 2000** as *Ceratolejeunea plumula*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 262*, *520*, *544* (ULM, USJ, **Bernecker-Lücking 2000** as *Ceratolejeunea plumula*); S. loc. (Dauphin 1995, 1999 both as *Ceratolejeunea plumula*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Western Indian Ocean, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea confusa R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 72(2): 313, 1956 (Schuster 1956a). Type: Trinidad.

GUATEMALA. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Gradstein and Costa 2003; Bastos 2004; Alvarenga et al. 2008; Mello et al. 2011; Campos et al. 2014; Costa 2017; Costa et al. 2017, 2020; Stotler and Crandall-Stotler 2017). LIMÓN: Talamanca cantón, Punta Uva, *Dauphin & Rodriguez-Huettmann* (NY, **Dauphin 2000, 2003, 2005**).

PANAMA. BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4612*, det. Dauphin Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4614* (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Tranquilo Bay Eco Adventure Lodge (9°15′23.1″N, 82°08′41.4″W) in Isla Bastimento (**Salazar Allen et al. 2022**).

COCOS I. Fila sobre Valle Wafer, 5°32′57″N, 87°03′36″W, 180 m, 26 Jan 1994, *Dauphin 1080*, det. G. Dauphin Apr 2021 (USJ-47191!, CR-4468414!, W-0207414! https://w.jacq.org/W0207414, **this publication**); S. loc., *Dauphin 1080* (USJ, **Dauphin 2000, 2003, 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea cornuta (Lindenb.) Steph., *Pflanzenw. Ost-Afrikas C*: 65, 1895 (Stephani 1895c).

≡*Jungermannia cornuta* Lindenb., *Syn. hepat. eur.*: 23, 1829 (Lindenberg 1829). Type: Jamaica.

=*Lejeunea involvens* Nees et Mont., *Ann. Sci. Nat., Bot.*, ser. 2, 14: 336, 1840 (Montagne 1840), syn. fide Dauphin (2003). Type: French Guiana.

≡*Ceratolejeunea involvens* (Nees et Mont.) Steph., *Sp. Hepat. (Stephani)* 5: 419, 1913 (Stephani 1913).

≡*Lejeunea variabilis* Lindenb., *Syn. Hepat.* 3: 399, 1845 (Gottsche et al. 1845a), syn. fide Dauphin (2003). Type: Saint Kitts.

≡*Ceratolejeunea variabilis* (Lindenb.) Pearson, *Forh. Vidensk.-Selsk. Kristiania* 1892(8): 8, 1892 (Pearson 1892).

=*Lejeunea maritima* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 210, 1884 (Spruce 1884), syn. fide Dauphin (2005). Type: Brazil.

≡*Ceratolejeunea maritima* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 423, 1913 (Stephani 1913).

=*Lejeunea megalophysa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 202 (Spruce 1884), syn. fide Dauphin (2003). Type: Brazil.

≡*Ceratolejeunea megalophysa* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 425, 1913 (Stephani 1913).

=*Ceratolejeunea valida* Evans, *Bull. Torrey Bot. Club* 32(6): 280, 1905 (Evans 1905a), syn. fide Dauphin (2005). Type: Puerto Rico.

=*Ceratolejeunea spruceana* Zwickel, *Ann. Bryol.* 6: 108, 1933 (Zwickel 1933), syn. fide Dauphin (2003). Type: Brazil.

=*Ceratolejeunea lobata* L.Clark, *Proc. Calif. Acad. Sci.*, ser. 4, 27(18): 597, 1953 (Clark 1953a), syn. fide Dauphin (2003). Holotype: Costa Rica, Cocos Island, Wafer Bay, 28 Jun 1932, *Clark 221* (CAS-372425, isotype MO-2201093 http://tropicos.org/specimen/100323908).

GUATEMALA. S. loc. (Bastos 2004). ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Santa María Cahabón municipio, Secanquim, *Maxon & Hay 3206* (US, **Dauphin 2000, 2003; Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Ceratolejeunea valida*); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ?EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, Morales 2011 as *Ceratolejeunea* cf. *corniculata*) Note: We are not aware of any positively identified specimen from El Petén. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Ceratolejeunea valida*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (Jovet-Ast 1957 as *Ceratolejeunea megalophysa*). CAYO: Santa Teressa, *Steere 2707* (hb. Steere, **Fulford 1945** as *Ceratolejeunea megalophysa*); Southern Maya Mountains, Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 9 Dec 1993, *Allen 15314*, det. Dauphin Jun 2017 (MO-4421582! http://tropicos.org/specimen/90019439, **Whittemore and Allen 1996** as *Ceratolejeunea maritima*). *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 970 m, 21 Feb 1997, *Allen 19017*, det. Dauphin Jun 2017 (MO-5221232! https://tropicos.org/specimen/90078944, **this publication**); Columbia River Forest Reserve, Union Camp, 16°23′54″N, 89°08′29″W, 650 m, 10 Feb 1997, *Allen 18529*, det. Dauphin Jun 2017 (MO-5141703! https://tropicos.org/specimen/90078945, **this publication**); S. loc. (Whittemore and Allen 1996 as *Ceratolejeunea megalophysa*).

HONDURAS. S. loc. (Jovet-Ast 1951 as *Ceratolejeunea maritima*, 1957 as *Ceratolejeunea maritima*, 1959 as *Ceratolejeunea megalophysa*, 1960 as *Ceratolejeunea maritima*; Fulford 1967 as *Ceratolejeunea maritima*, 1987; Fulford and Sharp 1990 as *Ceratolejeunea maritima*; Lücking 1995 as *Ceratolejeunea maritima*; Bastos 2004). ATLÁNTIDA: La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 29 Dec 2001, *Dauphin & Ferrufino 3004*, det. Dauphin 2016 (CR!, **this publication**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54584* (F, JE, **Fulford 1945** as *Ceratolejeunea maritima*; **Herzog 1951** as *Ceratolejeunea maritima*); Tela municipio, Lancetilla Valley, *Standley 55629* (C, F, JE, **Fulford 1945**); Tela municipio, Lancetilla Valley, *Standley 54587* (B, **Dauphin 2000, 2003**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54841* (B, JE, **Dauphin 2000, 2003**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54841a* (**Herzog 1951** as *Ceratolejeunea spruceana*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55207* (C, F, **Fulford 1945; Dauphin 2000, 2003**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55626* (JE, C, **Fulford 1945**). COMAYAGUA: Siguatepeque municipio, 12 km NW of Siguatepeque, *Maas & Molina 1049* (GOET, **Dauphin 2000, 2003**). *COPÁN: Copán municipio, Copan Ruinas, ~18 km N of Copan Ruinas, road to Agua Caliente at El Zapote, 14°58′N, 89°10′W, 900–1,000 m, 30 Apr 1996, *Allen 17744*, det. Dauphin May 2017 (MO-6230305! https://tropicos.org/specimen/100367461, **this publication**); CORTÉS: N of Lake Yojoa, *Morton 7636j* (US, **Dauphin 2000, 2003**); San Francisco de Yojoa municipio, Along Río Lindo, N of Lake Yojoa, *Morton 7540a*, *7851a* (US, **Dauphin 2000, 2003**); San Pedro Sula municipio, Peña Blanca, *Tag 29128* (US, **2000, Dauphin 2003**).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Ceratolejeunea maritima* and *Ceratolejeunea variabilis*; Lücking 1995 as *Ceratolejeunea maritima*). *MORAZÁN: La Tejera municipio, calle a Sabanetas, 3 Dec 2008, *Búcaro H109*, det. Dauphin (MHES!, **this publication**). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/2/10*, *A/5/7*, *A/8/1*, *A/23/1*, *A/25/3*, *A/26/7* (**Winkler 1967** as *Ceratolejeunea maritima*).

***NICARAGUA.** *ATLÁNTICO SUR: Nueva Guinea municipio, road from Rio Blanco to Rio Copalar, 12°52′30″ N, 85°02′30″ W, 13 Feb 1979, *Stevens 12050*, det. Dauphin May 2017 (MO-5238329! http://tropicos.org/specimen/90108646, **this publication**); Nueva Guinea municipio, road to Colonia Yolaina, 11°40′N, 84°26′W, 11–12 Feb 1978, *Stevens 6326*, det. Dauphin May 2017 (MO-5238557! http://tropicos.org/specimen/90108891, **this publication**). *ESTELÍ: Condega municipio, N Slope of Cerro El Fraile, 13°25′N, 86°15–6′W, 28 Sep 1980, *Stevens & Montiel 18129*, det. Dauphin May 2017 (MO-5238373! http://tropicos.org/specimen/90108649, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Jovet-Ast 1957 as *Ceratolejeunea maritima*, 1960 as *Ceratolejeunea maritima*; Bonner 1963b as *Ceratolejeunea involvens*; Fulford 1967 as *Ceratolejeunea maritima*, 1987 also as *Ceratolejeunea involvens*; Cole 1982 also as *Ceratolejeunea maritima*, 1983 also as *Ceratolejeunea maritima*; Fulford and Sharp 1990 as *Ceratolejeunea maritima*; Bastos 2004); S. loc., *Schäfer-Verwimp & Holz SV/H-0285/A* (JE, **Scheben et al. 2016; Sierra et al. 2018b**); S. loc., *Tonduz 15551* (G-Stephani 15551, **Morales 1991**); S. loc., *Tonduz* (**Fulford 1945**). ALAJUELA: Río Cuatre cantón, Laguna Hule, *Dauphin & Gonzáles 2138* (GOET, CR, **Dauphin 2000, 2003, 2005**); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Norris 110255*, *110410*, *111087c*, *111095* (UC, **Norris et al. 2017**); San Ramón, *Brenes 16206*, *16215*, *16255*, *16261* (C, **Fulford 1945** as *Ceratolejeunea maritima*; **Morales 1991** as *Ceratolejeunea*

maritima). CARTAGO: Cerro de La Muerte, *King c1159b* (US, **Dauphin 2000, 2003, 2005**); Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz* (Hb. Cardot 1550, **Bonner 1953b** as *Ceratolejeunea involvens*; **Morales 1991** as *Ceratolejeunea involvens*); Paraíso cantón, Orosi, Tapantí, *Morales 1797 p.p.*, det. Morales (USJ, **Morales 1991** as *Ceratolejeunea valida*). HEREDIA: Sarapiquí cantón, Estación Biológica La Selva, sendero SUR, *Lücking 34242* (hb. Bernecker-Lücking, **Dauphin 2000, 2003, 2005**); Sarapiquí cantón, Estación Biológica La Selva, sendero SUR, *Lücking 97-10* (hb. Bernecker-Lücking, **Dauphin 2000, 2003**); Sarapiquí cantón, Horquetas cerca del Río Villalobos y Hotel Rara Avis, *Dauphin 2204* (GOET, CR, **Dauphin 2000, 2003, 2005**); Sarapiquí, *Lücking* (GOET, **Dauphin 2000, 2003, 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-162*, *92-179*, *92-180*, *etc.* (hb. Lücking, **Dauphin et al. 2006**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Ceratolejeunea maritima*); Pococí cantón, Chemin de Carrillo, versant atlantique, *Pittier & Biolley 6066* (PC, **Dauphin 2000, 2003, 2005**); Pococí cantón, Cuatro Esquinas de San Juan, *Dauphin et al. 1669* (GOET, CR, **Dauphin 2000, 2003, 2005**); Pococí cantón, Tortuga Lodge near Tortuguero, 21 Feb 1985, *Eggers CR 12/82* (Eggers et al. 2001 as *Ceratolejeunea* cf. *maritima* in specimen of *Cololejeunea guadelupensis*); Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11247b*, det. Dauphin Jun 2017 (MO-6690015! https://tropicos.org/specimen/100860963, **this publication**); Pococí cantón, Tortuguero, up to 5 km inland from Green Turtle station, *Steere CR-9*, *CR-143* (NY, **Dauphin 2000, 2003, 2005**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Camino Pittier-Altamira, *Dauphin 1650* (GOET, CR, **Dauphin 2000, 2003, 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, John Campbell property, 10°18′N, 84°48′W, 1,500 m, 23 Mar 1992, *Lyon 439*, det. Dauphin Jun 2017 (MO-4411444! https://tropicos.org/specimen/90029618, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, *Gradstein 9480*, *9486*, *9506*, *9553* (GOET, **Dauphin 2000, 2003, 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** also as *Ceratolejeunea maritima*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** also as *Ceratolejeunea maritima*); Monteverde, Feb 1963, *James, W. 63B32*, det. Dauphin May 2017 (MO-6168137!, **this publication**); Monteverde, Feb 1963, *James, W. 63M-7B*, det. Dauphin May 2017 (MO-6168136!, **this publication**); Monteverde, 10 Jan 1965, *James, M. 31*, det. Robinson (MO-6161165!, **this publication**); Monteverde, 10 Jan 1965, *James, M. 31a* (R, **Reed and Robinson 1971**); Monteverde, 15 Jan 1965, *James, W. 40e*, det. Dauphin 2017 (MO-6168110!, R, **Reed and Robinson 1971**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-13*, det. Dauphin Jun 2017 (MO-6167471!, R, **Reed and Robinson 1971** as *Ceratolejeunea maritima*); Osa cantón, Osa Peninsula, Centro Boscosa, *Gradstein & Dauphin 9336*, *9346* (GOET, USJ, **Dauphin 2000, 2003, 2005**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b** as *Ceratolejeunea maritima*); Osa cantón, Santo Domingo de Golfo Dulce, *Tonduz* (Hb. Cardot 15551, **Bonner 1953b** as *Ceratolejeunea involvens*; **Morales 1991** as *Ceratolejeunea involvens*); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Atirro Esperanza, *Maas* (GOET, U, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Ceratolejeunea maritima*); Moravia cantón, Bajo de La Hondura, *Standley & Valerio 51842* (US, **Dauphin 2005**); Moravia cantón, Bajo de La Hondura, *Standley 51842* (US, **Dauphin 2000, 2003**); Moravia cantón, La Palma, *Griffin & Morales A57* (FLAS, **Morales 1991** as *Ceratolejeunea maritima*); Moravia cantón, La Palma, *Maas 844h* (GOET, U, **Dauphin 2005**); Moravia cantón, La Palma, 500–2,500 m, 17 Mar 1924, *Standley 37971 p.p.* (JE, S, **Herzog 1951** as *Ceratolejeunea variabilis*; **Morales 1991** as *Ceratolejeunea variabilis*).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Jovet-Ast 1951, 1957, 1960 all as *Ceratolejeunea maritima*; Fulford 1967 as *Ceratolejeunea maritima*, 1987 as *Ceratolejeunea variabilis*; Fulford and Sharp 1990 as *Ceratolejeunea maritima* and *Ceratolejeunea variabilis*; **Gradstein 1993** as *Ceratolejeunea maritima*; Lücking 1995 as *Ceratolejeunea maritima*; Stotler et al. 1998 as *Ceratolejeunea maritima*; Bastos 2004); S. loc., *Rottenberg 3* (GOET, **Dauphin 2000, 2003**); S. loc., *Schäfer-Verwimp & Verwimp 34172/B*, *34271*, *34748* (JE, **Scheben et al. 2016**; **Sierra et al. 2018b**). BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4620*, det. Dauphin Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4625*, det. Dauphin Aug 2017 (PMA, **this publication**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 751* (PMA, **Stotler et al. 1998** as *Ceratolejeunea megalophysa*); Bugaba distrito, Santa Marta, *Vinda 1517* (NY, PMA, **Stotler et al. 1998**; **Dauphin 2000, 2003**; **Dauphin et al. 2006**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Homitos, Camino en la Quijada del Diablo hacia el Rio Chiriquí Viejo y la quebrada en el camino, *Salazar Allen et al. 6287* (GOET, U, **Dauphin 2000, 2003**; **Dauphin et al. 2006**); Gualaca distrito, Hornito, Fortuna,

1,000 m, *Salazar Allen et al. 595*, *615b*, *616a*, *662* (PMA, **Stotler et al. 1998** as *Ceratolejeunea maritima*); S. loc. (Schäfer-Verwimp 2014); S. loc., *Miliou 424* (G, **Bonner 1953b** as *Ceratolejeunea variabilis*; **Stotler et al. 1998** as *Ceratolejeunea variabilis*); Tierras Altas distrito, El Hato, *Stern & Chambers 70*, *71* (PMA, **Stotler et al. 1998** as *Ceratolejeunea maritima*). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31038*, *31058* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen & Béliz 1379* (NY, **Dauphin 2000, 2003; Dauphin et al. 2006**); Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen et al. 1379* (PMA, **Stotler et al. 1998**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *663*, *etc.* (PMA, **Sierra et al. 2019a**). COLÓN: Chico Trail, Río Indio, *Steyermark & Allen 17451* (MO, **Fulford 1945** as *Ceratolejeunea maritima*; **Stotler et al. 1998** as *Ceratolejeunea maritima*); Colón distrito, Quebrada Bonita, 70–80 m, 27 Dec 1934, *Steyermark & Allen 17188*, det. Dauphin Jun 2017 (MO-5139406! https://tropicos.org/specimen/90076800, **this publication**); Colón distrito, Tank Farm area or Gamboa Forest Preserve, N of Gamboa, *Welch 20114* (NY, **Dauphin 2000, 2003; Dauphin et al. 2006**); Colón distrito, W of Quebrada Salamanca, 70 m, *Dodge et al. 17092* (MO, **Stotler et al. 1998** as *Ceratolejeunea megalophysa*); S. loc. (Schäfer-Verwimp 2014). DARIÉN: Cerro Pirre (Stotler et al. 1998 also as *Ceratolejeunea maritima*); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9233* (PMA, **Stotler et al. 1998**); Cerro Pirre, 1,000–1,100 m, *Salazar Allen & Gradstein 9246* (PMA, **Stotler et al. 1998; Dauphin et al. 2006**); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9277* (PMA, GOET, U, **Stotler et al. 1998** as *Ceratolejeunea maritima*; **Dauphin 2000, 2003; Dauphin et al. 2006**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Ceratolejeunea* cf. *maritima*); Chepigana distrito, Cerro Sapo, approach from Garachiné, *Hammel 7249* (GOET, U, **Dauphin 2000, 2003; Dauphin et al. 2006**); Chepigana distrito, Guayabo Chiquito, *Stern & Chambers 200* (MO, **Stotler et al. 1998** as *Ceratolejeunea maritima*); Chepigana distrito, Punta Guayabo Grande y Punta Guayabo Chiquito, *Stern & Chambers 206* (MO, **Stotler et al. 1998** as *Ceratolejeunea maritima*); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 800–900 m, *Salazar Allen et al. 6842* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15072*, *15142* (GOET, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Shattuck 2CH* (F, **Stotler et al. 1998** as *Ceratolejeunea maritima*); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3162* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Lutz, *Shattuck 568 p.p.* (F, PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 9*, *32* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3140* (CR, PMA, **Dauphin et al. 2022**). PANAMA: Panamá distrito, Cerro Jefe, *Salazar Allen & Gradstein 9405* (PMA, **Stotler et al. 1998** as *Ceratolejeunea maritima*; **Dauphin 2000, 2003**); Panamá distrito, Cerro Jefe, 2 km before the top of Cerro Jefe on the south side, *Martínez 880* (PMA, **Stotler et al. 1998** as *Ceratolejeunea maritima*); Panamá distrito, Cerro Jefe, behind INTEL tower northwards, *Salazar Allen & Chung 5205* (GOET, U, **Dauphin 2000, 2003; Dauphin et al. 2006**); Panamá distrito, near summit of Cerro Jefe, ~1,000 m, 11 Jun 1987, *Salazar Allen & Gradstein 280* (EGR, **Pócs 2011**); Panamá distrito, near summit of Cerro Jefe, 12 Jun 1991, *Salazar Allen & Gradstein 9405*, det. Dauphin Jun 2017 (MO-3955642!, B, F, GOET, U, **Dauphin et al. 2006**); Panamá distrito, Summit Experimental Garden, *Welch 20057*, *20153*, *20174* (NY, **Dauphin 2000, 2003; Dauphin et al. 2006**); S. loc. (Schäfer-Verwimp 2014). VERAGUAS: Isla Canales de Tierra, Sendero camino a Ensenada Guabo, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19960*, *20061*, *20110*, *20113*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**); Isla Canales de Tierra, Sendero de la via del tren hacia el laboratorio, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 20190*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**); Isla Canales de Tierra, Sendero de los tanques de reserva de agua, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19926*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**); Isla Canales de Tierra, Sendero Punta, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 20126*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**); Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34271* (JE, **Schäfer-Verwimp 2014**); Soná distrito, Región de Bahía Honda, Península de Punta Gorda, Jan 2002, *Wong 608*, *619*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero de Manglarito hacia Playa Limón, Jan 2002, *Salazar Allen et al. 20395*, det. G. Dauphin (PMA, **Salazar Allen and Chung 2003, 2006**).

COCOS I. Boca Río Yglesias, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 1140*, det. G. Dauphin Apr 2021 (USJ-47962, CR-4468419!, W-0207415! https://w.jacq.org/W0207415, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 14 Feb 1994, *Dauphin 971* (USJ, **Dauphin 1995** as *Ceratolejeunea maritima*, **1999** as *Ceratolejeunea maritima*); Chatham bay, *Weber 580* (GOET, U, **Dauphin 2000, 2003, 2005**); S. loc. (Jovet-Ast 1951 as *Ceratolejeunea maritima*; Fosberg and Klawe 1966 as *Ceratolejeunea lobata*; Dauphin 1995, 1999 both as *Ceratolejeunea lobata*); Wafer Bay, 28 Jun 1932, *Clark 221* (CAS-372425, MO-2201093 http://tropicos.org/specimen/100323908, **TYPE** of *Ceratolejeunea lobata*, **Dauphin 2000, 2003**); Wafer Bay, 28 Jun 1932, *Howell 227 p.p.* (CAS, **Clark**

1953a as *Ceratolejeunea maritima*); Wafer Bay, 28 Jun 1932, *Walton Clark 221* (CAS-372425, **Clark 1953a** as *Ceratolejeunea lobata*).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Indian Subcontinent, Malesia, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea cubensis (Mont.) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

≡*Lejeunea cubensis* Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 481, 1842 (Montagne 1842b). Type: Cuba.

=*Ceratolejeunea guadelupensis* Steph., *Sp. Hepat. (Stephani) 5*: 415, 1913 (Stephani 1913), syn. fide Dauphin (2003). Type: Guadeloupe.

GUATEMALA. S. loc. (Schuster 1956a, 1980d; Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). EL PETÉN: La Libertad, *Lundell 2693* (SR, **Fulford 1945**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** also as *Ceratolejeunea* aff. *cubensis*).

BELIZE. S. loc. (**Fulford 1938**; Frye and Clark 1947; Schuster 1956a, 1980d; Whittemore and Allen 1996).

***HONDURAS.** S. loc. (Oliveira-e-Silva and Yano 2000). *ATLÁNTIDA: La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 29 Dec 2001, *Dauphin & Ferrufino 3007* (CR!, **this publication**); La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 29 Dec 2001, *Dauphin & Ferrufino 3012* (CR!, **this publication**); La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 29 Dec 2001, *Dauphin & Ferrufino 3017* (CR!, **this publication**); La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 29 Dec 2001, *Dauphin & Ferrufino 3018* (CR!, **this publication**).

COSTA RICA. ALAJUELA: Poás National Park (Dauphin 2005); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, *Norris 110243* (UC, **Norris et al. 2017**). HEREDIA: San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 50010*, *50049* (JE, **Dauphin 2000, 2003**); Sarapiquí cantón, Estación Biológica La Selva, sendero SUR, *Lücking 97-11* (hb. Bernecker-Lücking, **Dauphin 2000, 2003**); Sarapiquí cantón, La Selva, *Lücking 34273* (**Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-20*, *92-23*, *92-393* (hb. Lücking, Lücking 1995 as *Ceratolejeunea* cf. *guadalupensis*); Pococí cantón, Braulio Carrillo National Park, Botarrama, *Lücking 92-578* (**Dauphin 2000, 2003, 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (Lücking 1997 as *Ceratolejeunea* cf. *guadalupensis*); Pococí cantón, Cerro Tortuguero, *Dauphin* (**Dauphin 2005**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

PANAMA. S. loc. (Frye and Clark 1947; Schuster 1956a, 1980d; Fulford and Sharp 1990; Stotler et al. 1998; Oliveira-e-Silva and Yano 2000). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Rojas-Carvajal A1*, det. Dauphin Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**); Tranquilo Bay Eco Adventure Lodge (9°15′23.1″N, 82°08′41.4″W) in Isla Bastimento (**Salazar Allen et al. 2022**). COCLÉ: Antón distrito, River Antón, *Hunter & Allen* (MO, **Fulford 1945**; **Stotler et al. 1998**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 672*, *673*, *692*, *747*, *823* (PMA, **Sierra et al. 2019a**). COLÓN: Colón distrito, Quebrada Bonita, 70–80 m, 20 Dec 1934, *Dodge & Allen 8803*, det. Dauphin May 2017 (MO-5139407! https://tropicos.org/specimen/90066876, **this publication**); Colón distrito, Tank Farm area or Gamboa Forest Preserve, N of Gamboa, *Welch 20066* (NY, **Dauphin 2000, 2003**; **Dauphin et al. 2006**). DARIÉN: Cerro Pirre, Estación del INRENARE, 900 m, *Salazar Allen & Gradstein 9212* (PMA, GOET, U, **Dauphin 2000, 2003**; **Dauphin et al. 2006**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Salazar Allen & Gradstein 15142* (GOET, **Dauphin 2000, 2003**; **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Brook 2 and 3, AVA and Zetek, *Willis 5d*, *7c*, *30d*, *54c*, *54f* (MO, **Stotler et al. 1998**; **Dauphin et al. 2022**). PANAMA: Chepo distrito, Sabana, *Hunter & Allen* (US, **Dauphin et al. 2006**); Chepo distrito, Sabana, 20 Jan 1935, *Hunter & Allen*, det. Dauphin Jun 2017 (MO-6168155!, **this publication**); Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 24 Jul 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**); Panamá distrito, Summit Experimental Garden, *Welch 20160*, *20166* (NY, **Dauphin 2000, 2003**; **Dauphin et al. 2006**).

COCOS I. Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 14 Feb 1994, *Dauphin 1078* (USJ, **Dauphin 1995, 1999**); Río Genio, 5°32′57″N, 87°03′56″W, 80 m, 26 Jan 1994, *Dauphin 1066*, det. G. Dauphin Apr 2021 (USJ-47197!, CR-4468417!, W-0207416! https://w.jacq.org/W0207416, **this publication**); S. loc. (Dauphin 1995); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 15 Feb 1994, *Dauphin 1106* (USJ, GOET, **Dauphin 1995, 1999, 2000, 2003, 2005**; **Dauphin et al. 1998**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea desciscens (Sande Lac.) Schiffn., *Hepat. (Engl.-Prantl)*: 126, 1893 (Schiffner 1893a).

≡*Lejeunea desciscens* Sande Lac., *Syn. Hepat. Jav.*: 107, 1857 (Sande Lacoste 1856). Type: Suriname.

GUATEMALA. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

†COSTA RICA. †CARTAGO: Paraíso cantón, Orosi, Refugio de Fauna Silvestre Tapantí, *Morales 2137* (USJ, **Morales 1991**). Note: Specimen is a misidentified *Ceratolejeunea globulifera* (G. Dauphin).

PANAMA. S. loc. (Gradstein 2021); COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34136/C* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America, Brazil.

Ceratolejeunea fallax (Lehm. et Lindenb.) Bonner, *Candollea* 14: 189, 1953 (Bonner 1953b).

≡*Jungermannia fallax* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 17, 1833 (Lehmann 1833). Type: Brazil.

≡*Lejeunea fallax* (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 407, 1845 (Gottsche et al. 1845a).

=*Lejeunea brasiliensis* Gottsche, *Syn. Hepat.* 3: 398 (Gottsche et al. 1845a), syn. fide Dauphin (2003). Type: Brazil.

≡*Ceratolejeunea brasiliensis* (Gottsche) Steph., *Primit. Fl. Costar.*: 179, 1893 (Stephani 1893c).

=*Ceratolejeunea corniculata* Spruce ex Steph., *Spec. Hepat. (Stephani)* 5: 404, 1913 (Stephani 1913), syn. fide Dauphin (2003). Type: Brazil.

=*Ceratolejeunea fusilobula* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 149, 1951 (Herzog 1951), syn. fide Dauphin (2003). Lectotype (Söderström and Hentschel 2023: 5): Costa Rica, Viento Fresco, 1908, *P. C. Standley 47806 p.p.*, "Typus! Unicum" (JE-04001125 https://je.jacq.org/JE04001125).

GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, 16°22′59″N, 89°07′18″W, 12 Feb 1997, *Allen 18643*, det. Dauphin Jun 2017 (MO-5141702! http://tropicos.org/specimen/90078946, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 970 m, 21 Feb 1997, *Allen 19017A*, det. Dauphin Jun 2017 (MO-5141701! http://tropicos.org/specimen/101411589, **this publication**).

HONDURAS. S. loc. (Fulford 1987; Fulford and Sharp 1990). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55622a* (**Herzog 1951** as *Ceratolejeunea corniculata*). *COMAYAGUA: Rio Selguapa, ~4 km SE of Siguatepeque, 14°34′N, 87°48′W, 1,600 m, 8 May 1992, *Allen 11780*, det. Dauphin Jun 2017 (MO-5264279! https://tropicos.org/specimen/90083707, **this publication**). *INTIBUCÁ: S. loc., 17 Jul 1982, *Tag 1982-208*, det. Dauphin Jun 2017 (MO-6168162!, **this publication**).

COSTA RICA. S. loc. (Fulford 1987; Fulford and Sharp 1990). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47806 p.p.* (G, JE-04001125, **TYPE** of *Ceratolejeunea fusilobula*, **Herzog 1951** as *Ceratolejeunea fusilobula*; **Morales 1991** as *Ceratolejeunea fusilobula*; **Dauphin 2000, 2003**); Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47806* (**Bonner 1953b, 1963b**, both as *Ceratolejeunea fusilobula*); San Ramón cantón, La Balsa, 10°11′N, 84°30′W, 1,050–1,150 m, 10 Sep 1979, *Stevens 14254*, det. Dauphin May 2017 (MO-5274319! https://tropicos.org/specimen/90132329, **this publication**); San Ramón cantón, Monteverde Cloud Forest Reserve, Refugio El Alemán, 10°18′N, 84°46–47′W, 1,600 m, 2 Apr 1992, *Lyon 633*, det. Dauphin May 2017 (MO-4411700! https://tropicos.org/specimen/90028936, **this publication**). CARTAGO: Jimenéz cantón, Pejibaye, ~900 m, *Standley 46809* (JE, B, US, **Zwickel 1932** as *Ceratolejeunea brasiliensis*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, Cerro Orosilito, *Dauphin 1896* (CR, **Dauphin 2005**). HEREDIA: San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 50010*, *50049* (JE, **Zwickel 1932** as *Ceratolejeunea brasiliensis*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°15′N, 84°45′W, 5 Aug 1993, *Timme 11375*, det. Dauphin Jun 2017 (MO-6690013! https://tropicos.org/specimen/100861231, **this publication**); Monteverde, *Gradstein 9610* (GOET, **Dauphin 2000, 2003, 2005**); Osa cantón, Corcovado National Park, Sirena-Los Patos, *Kunz* (USJ, **Dauphin 2000, 2003, 2005**). SAN JOSÉ: Moravia cantón, Chemin a Carrillo, *Pittier & Biolley* (PC, **Morales 1991; Dauphin 2000, 2003, 2005**); Moravia cantón, Chemin a Carrillo, *Pittier 6066* (**Stephani 1893c** as *Ceratolejeunea brasiliensis*; **Morales 1991**); Moravia cantón, Chemin de Carillo, versant Atlantique, 300 m, Nov 1890, *Biolley* (**Bonner 1953b**); Moravia cantón, La Palma, Jan 1960, *Horich 275A*, det. Dauphin May 2017 (MO-6168138!, **this publication**).

PANAMA. S. loc. (Fulford and Sharp 1990, Fulford 1987, Stotler et al. 1998); S. loc., *Rottenberg 2* (GOET, **Dauphin 2000, 2003**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021** as *Ceratolejeunea corniculata*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/E* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, La Mesa, 10 Aug 1971, *Spellman et al. B116*, det. Dauphin May 2017 (MO-2126682!, **this publication**); Antón distrito, El Valle de Antón, La Mesa, 900–930 m, 22 Jul 1976, *Croat 37465B*, det. Dauphin May 2017 (MO-5274369! https://tropicos.org/specimen/90132430, **this publication**). *NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, 13 Mar 1976, *Croat 33221*, det. Dauphin May 2017 (MO-2852734!, **this publication**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003 as *Ceratolejeunea corniculata*); La Chorrera distrito, Barro Colorado Island, *Shattuck 568 p.p.* (**Dauphin et al. 2022** as *Ceratolejeunea corniculata*). PANAMA: Panamá distrito, near summit of

Cerro Jefe, 12 Jun 1991, *Salazar Allen & Gradstein 9405*, det. Dauphin Jun 2017 (MO-3955642!, B, F, GOET, U, **this publication**); S. loc. (Schäfer-Verwimp 2014).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 971*, det. G. Dauphin Apr 2021 (USJ-47181!, CR-4468426!, W-0207417! https://w.jacq.org/W0207417, **this publication**); S. loc. (Dauphin 2005; Salazar Allen and Chung 2003 as *Ceratolejeunea corniculata*); S. loc., *Stewart 1354 p.p.* (GOET, **Dauphin 2000, 2003**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea filaria (Taylor) Steph., *Sp. Hepat. (Stephani)* 5: 412, 1913 (Stephani 1913).

≡*Lejeunea filaria* Taylor, *Nov. Stirp. Pug.* 8: 28, 1844 (Lehmann 1844). Type: Venezuela.

=*Lejeunea longicornis* Gottsche, *Syn. Hepat.* 3: 401, 1845 (Gottsche et al. 1845a), syn. fide Reiner-Drehwald (1999). Type: St. Kitts.

≡*Colura longicornis* (Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 402, 1877 (Trevisan 1877).

≡*Ceratolejeunea longicornis* (Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 421, 1913 (Stephani 1913).

=*Lejeunea fastigiata* Spruce, *Mem. Torrey Bot. Club* 1: 123, 1890 (Spruce 1890), syn. fide Dauphin (2003). Type: Bolivia.

≡*Ceratolejeunea fastigiata* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 411, 1913 (Stephani 1913).

=*Ceratolejeunea schwaneckei* Steph., *Hedwigia* 34(5): 237, 1895 (Stephani 1895c), syn. fide Dauphin (2003). Type: Puerto Rico.

=*Ceratolejeunea spinosa* var. *flagelliformis* Steph., *Hedwigia* 34(5): 238, 1895 (Stephani 1895c), syn. fide Dauphin (2003). Type: Martinique.

≡*Ceratolejeunea flagelliformis* Fulford, *Bull. Torrey Bot. Club.* 71(6): 637, 1944 (Fulford 1944).

=*Ceratolejeunea spinosa* var. *costaricensis* Zwickel, *Beih. Bot. Centralbl.* 49: 610, 1932 (Zwickel 1932). Lectotype (Söderström and Hentschel 2023: 5): Costa Rica, La Hondura, province of San José, altitude 1,300–1,700 m, Mar 2–4, 1924, Standley 36412 (JE-04010817 https://je.jacq.org/JE04010817, isolectotype US-00070810 http://n2t.net/ark:/65665/3a2ee40c9-7fb7-4922-8e0d-63bf13d92362).

=*Ceratolejeunea multiocellata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 150, 1951 (Herzog 1951), syn. fide Dauphin (2003). Lectotype (Söderström and Hentschel 2023: 5): Costa Rica, Cartago, Pejivalle, 900 m, 7–8 Feb 1926, *Standley & Valerio 46809* (JE-04002356 https://je.jacq.org/JE04002356, isolectotypes JE-04007798 https://je.jacq.org/JE04007798, US-00070808 http://n2t.net/ark:/65665/314bfd475-b8c1-4edc-8d0e-ea01f687a74c).

***BELIZE.** *CAYO: Southern Maya Mountains, Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 9 Dec 1993, *Allen 15314*, det. Dauphin Jun 2017 (MO-4421582! http://tropicos.org/specimen/90019439, **this publication**).

HONDURAS. S. loc. (**Stephani 1913** as *Ceratolejeunea longicornis*; Arnell 1959 as *Ceratolejeunea longicornis*; Winkler 1967 as *Ceratolejeunea multiocellata*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54380*, *54388*, *54584*, *55629* (C, F, JE, **Dauphin 2000, 2003**). COMAYAGUA: Siguatepeque municipio, El Achiote, *Yuncker et al. 6639*, *6644* (NY, **Dauphin 2000, 2003**).

EL SALVADOR. CHALATENANGO: Citalá municipio, Cayacuanca, *Winkler C/1* (**Winkler 1967** as *Ceratolejeunea multiocellata*).

NICARAGUA. S. loc. (Bonner 1963b as *Ceratolejeunea longicornis* and *Colura longicornis*); S. loc., *Rothschuh* (**Bonner 1953b** as *Ceratolejeunea longicornis*).

COSTA RICA. S. loc. (Jovet-Ast 1959 as *Ceratolejeunea flagelliformis*; Fulford et al. 1970, 1987, both as *Ceratolejeunea flagelliformis*; Fulford et al. 1970 as *Ceratolejeunea flagelliformis*; Schäfer-Verwimp 1999 as *Ceratolejeunea flagelliformis*). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47806* (**Herzog 1951** as *Ceratolejeunea spinosa* var. *flagelliformis*; **Morales 1991** as *Ceratolejeunea flagelliformis*; **Dauphin 2000, 2003**); San Ramón cantón, Alto de La Palma, *Brenes 11765*, *16218a*, *19066*, *19132*, *20402* (C, **Fulford 1945** as *Ceratolejeunea flagelliformis*; **Morales 1991** as *Ceratolejeunea flagelliformis*); San Ramón cantón, Monteverde Cloud Forest Reserve, Refugio El Alemán, 10°18′N, 84°46–47′W, 1,600 m, 2 Apr 1992, *Lyon 652*, det. Dauphin 2017 (MO-4411445! https://tropicos.org/specimen/90029159, **this publication**). CARTAGO: El Guarco cantón, Cerro de La Muerte, 3 de Junio and surroundings, *Gradstein & Mues 9689* (GOET, **Dauphin 2000, 2003**); Jiménez cantón, Peijivalle, 900 m, 7–8 Feb 1926, *Standley & Valerio 46809* (JE-04002356 https://je.jacq.org/JE04002356, B, US, **TYPE** of *Ceratolejeunea multiocellata*, **Herzog 1951** as *Ceratolejeunea multiocellata*; **Bonner 1953b** as *Ceratolejeunea multiocellata*; **Morales 1991** as *Ceratolejeunea multiocellata*; **Dauphin 2000, 2003**); Jiménez cantón, Rio Naranjo (Dauphin 2005); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz* (B, M, **Dauphin 2000, 2003**). PUNTARENAS: Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Ceratolejeunea fastigiata*); Monteverde, *James 31* (US, **Dauphin 2000, 2003**); Monteverde, 10 Jan 1965, *James, M. 31*, det. Robinson (MO-6161165!, **Dauphin 2000, 2003**); Monteverde, 15 Jan 1965, *James, W. 40e*, det. Dauphin 2017 (MO-6168110!, R, **this publication**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Moravia cantón, La Hondura Bajo, 1,300–1,700 m, *Standley 36412* (B, US, S, JE, **Herzog 1951** as *Ceratolejeunea spinosa* var. *flagelliformis*, **Morales 1991** as *Ceratolejeunea flagelliformis*; **Dauphin 2000, 2003**); Moravia cantón, La Hondura Bajo, *Standley 37971* (US, **Dauphin 2000, 2003**); Moravia cantón, La Hondura, *Standley 37691* (**Morales 1991** as *Ceratolejeunea flagelliformis*; **Dauphin 2000, 2003**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37961* (**Herzog 1951** as *Ceratolejeunea spinosa* var. *flagelliformis*); Moravia cantón, La Palma, *Maas 844* (GOET, U, **Dauphin 2000, 2003**); Moravia cantón, La Palma, 1,500 m, *Valerio 35* (**Herzog 1951** as *Ceratolejeunea spinosa* var. *flagelliformis*; **Morales 1991** as *Ceratolejeunea flagelliformis*); Moravia cantón, La Palma, Bajo de La Hondura (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Dauphin 2005).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 34174*, *34466*, *34727* (JE, **Scheben et al. 2016**; **Sierra et al. 2018b**); S. loc., *Schäfer-Verwimp & Verwimp 34215* (JE, **Scheben et al. 2016**; **Sierra et al. 2018b**; **Zhu et al. 2018a, 2019**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 2544* (PMA, **Stotler et al. 1998** as *Ceratolejeunea flagelliformis*); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34727*, *34732*, *34740*, *34744* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34215* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37′N, 80°07′W, 1,000 m, 26 Mar 2013, *Schäfer-Verwimp & Verwimp 34215*, det. Schäfer-Verwimp (MO-6690257! https://tropicos.org/specimen/103070423, JE, **this publication**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 666*, *668*, *676*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Ceratolejeunea fastigiata*); Cerro Pirre, 1,000–1,100 m, *Salazar Allen & Gradstein 9246* (PMA, **Stotler et al. 1998** as *Ceratolejeunea fastigiata*; **Dauphin 2000, 2003**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Ceratolejeunea fastigiata*); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Zatek & Shattuck* (**Haynes 1933** as *Ceratolejeunea schwaneckei*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea globulifera Herzog, *Rev. Bryol. Lichénol.* 13(1): 23, 1942 (Herzog 1942a). Type: Colombia.

?GUATEMALA. ?IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Ceratolejeunea* cf. *globulifera*). Note: We are not aware of any positively identified specimen from Guatemala.

COSTA RICA. S. loc. (Linares and Uribe 2002; Gradstein and Uribe 2016; Gradstein 2021). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110455* (UC, **Norris et al. 2017**). CARTAGO: Paraíso cantón, Orosi, Refugio de Fauna Silvestre Tapantí, *Morales 2137* (USJ, **Dauphin 2000, 2003, 2005**).

Also reported from Western South America.

****Ceratolejeunea grandiloba*** J.B.Jack et Steph., *Hedwigia* 31(1): 16, 1892 (Jack and Stephani 1892) subsp. ***grandiloba***. Type: Colombia.

***COSTA RICA.** *PUNTARENAS: Buenos Aires cantón, Cordillera de Talamanca, Cerro Hoffmann (on the Pacific/Caribbean divide), 9°5.819′N, 82°58.687′W, 18 Feb 2012, *Wilbraham CR12-302*, det. G. Dauphin Sep 2020 (CR-5152110!, **this publication**).

Also reported from Northern South America, Western South America.

Ceratolejeunea guianensis (Nees et Mont.) Steph., *Sp. Hepat. (Stephani) 5*: 416, 1913 (Stephani 1913).

≡*Lejeunea guianensis* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 335, 1840 (Montagne 1840). Type: French Guiana.

***BELIZE.** *CAYO: Mountain Pine Ridge Area along Mahogany Creek, ~5 km S of Augustine, 16°55′N, 89°00′W, 480 m, 9 Dec 1996, *Allen 18211*, det. Dauphin May 2017 (MO-5141710! http://tropicos.org/specimen/90083701, **this publication**).

HONDURAS. S. loc. (Fulford and Sharp 1990; Ilkiu-Borges 2000). ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, E side of Rio Bonito, ~0.5 km from confluence with Quebrada Grande, 15°42′N, 86°51′W, 110 m, 12 Apr 1996, *Allen 17243*, det. Dauphin May 2017 (MO-6230306! https://tropicos.org/specimen/100367460, **this publication**); Tela municipio, Lancetilla Valley, *Standley 54388*, *55728* (C, F, **Fulford 1945**).

PANAMA. S. loc. (Frye and Clark 1947; Fulford and Sharp 1990; Ilkiu-Borges 2000). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Gudiño 3350*, det. Gudiño Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 838 p.p.* (PMA, **Sierra et al. 2019a**). PANAMA WEST: La Chorrera, Barro Colorado Island, Camino Lutz, *Shattuck 568 p.p.* (F, PMA, **Fulford 1945**). PANAMA: Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 24 Jul 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**).

***COCOS I.** S. loc., *Soto*, det. G. Dauphin Apr 2021 (USJ-47365!, **this publication**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea laetefusca (Austin) R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 72(2): 306, 1956 (Schuster 1956a).

≡*Lejeunea laetefusca* Austin, *Bot. Bull. (Hanover)* 1(8): 36, 1876 (Austin 1876). Type: Florida.

=*Ceratolejeunea integrifolia* A.Evans, *Bull. Torrey Bot. Club* 38(6): 213, 1911 (Evans 1911b), syn. fide Schuster (1980c). Type: Bahamas.

=*Ceratolejeunea deficiens* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 148, 1951 (Herzog 1951), syn. fide Dauphin (2003). Lectotype (Dauphin 2003): Costa Rica, Guanacaste, vicinity of Tilarán, 500–650 m, 10–31 Jan 1926, *Standley & Valerio 44392* (JE-04001122 https://je.jacq.org/JE04001122, isolectotype US-00070803 http://n2t.net/ark:/65665/321f74d78-ae3f-4927-8e55-2bb9cfe66bc6).

GUATEMALA. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 6 Dec 1996, *Allen 18007*, det. Dauphin Apr 2000 (MO-5141709! http://tropicos.org/specimen/90083702, **this publication**). COROZAL: Progreso Lagoon, *Balick et al. 2208* (NY, **Dauphin 2000, 2003**). *TOLEDO: Columbia River Forest Reserve, 16°22′59″N, 89°07′18″W, 710 m, 12 Feb 1997, *Allen 18643A*, det. Dauphin May 2000 (MO-5221230! http://tropicos.org/specimen/101411586, **this publication**); Punta Gorda, Nov 1932, *White 18*, det. Dauphin May 2017 (MO-5247572! https://tropicos.org/specimen/101411595, **this publication**); Punta Gorda, Nov 1932, *White 28*, det. Dauphin May 2017 (MO-5247571! http://tropicos.org/specimen/101411602, **this publication**); Punta Gorda, Nov 1932, *White 70c*, det. Dauphin May 2017 (MO-5247567! http://tropicos.org/specimen/101411604, **this publication**); Punta Gorda, Feb 1933, *White 105*, det. Dauphin May 2017 (MO-5247573! http://tropicos.org/specimen/101411605, **this publication**).

HONDURAS. S. loc. (Bonner 1963b as *Ceratolejeunea deficiens*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 54380 p.p.* (F, **Dauphin 2000, 2003**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55622* (**Bonner 1953b** as *Ceratolejeunea deficiens*); Tela municipio, Lancetilla Valley, 20–600 m, Dec 1927–Mar 1928, *Standley 55622 p.p.* (JE, **Herzog 1951** as *Ceratolejeunea deficiens*).

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, along caño Majagua, 13°45′N, 85°00′30″W, 750–850 m, 10–11 Mar 1978, *Stevens 6951 p.p.*, det. Dauphin May 2017 (MO-6699939! http://tropicos.org/specimen/100988185, **this publication**).

COSTA RICA. S. loc. (Bastos 2004). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 17207* (UC, **Norris et al. 2017**). GUANACASTE: La Cruz cantón, E slope of Volcán Orosí, 11°00′N, 85°30′W, 800 m, 8 May 1992, *Moran & Moran 5823*, det. Dauphin May 2017 (MO-3965748! https://tropicos.org/specimen/767661, **this publication**); La Cruz cantón, Guanacaste National Park, Volcán Orosí, Sendero Casafrán, *Dauphin 2512* (CR, **Dauphin 2005**); Tilarán (Dauphin 2005); Tilarán cantón, El Silencio, 400–700 m, *Standley 44392* (**Herzog 1951** as *Ceratolejeunea deficiens*; **Bonner 1953b, 1963b**, both as *Ceratolejeunea deficiens*; **Morales 1991** as *Ceratolejeunea deficiens*); Tilarán, 500–650 m, *Standley & Valerio 44392 p.p.* (JE, US, **TYPE** of *Ceratolejeunea deficiens*, **Dauphin 2000, 2003**); Tilarán, 500–650 m, *Standley 44309 p.p.* (Syntype, JE, **Herzog 1951** as *Ceratolejeunea deficiens*; **Bonner 1953b, 1963b**, both as *Ceratolejeunea deficiens*; **Dauphin 2000, 2003**). HEREDIA: San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 50010 p.p.* (**Dauphin 2000, 2003** reidentified as *Ceratolejeunea cubensis* by G. Dauphin); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 50010* (JE, **Herzog 1951** as *Ceratolejeunea deficiens*; **Bonner 1953b, 1963b**, both as *Ceratolejeunea deficiens*; **Morales 1991** as *Ceratolejeunea deficiens*, reidentified as *Ceratolejeunea cubensis* by G. Dauphin); San Isidro, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 50049* (JE, **Herzog 1951** as *Ceratolejeunea deficiens*; **Bonner 1953b, 1963b**, both as *Ceratolejeunea deficiens*; **Morales 1991** as *Ceratolejeunea deficiens*, reidentified as *Ceratolejeunea fallax* by G. Dauphin).

PANAMA. BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4607*, det. Dauphin Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4617*, det. Dauphin Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4618*, det. Dauphin Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). *COLÓN: Colón distrito, Pipeline road 4 km NW of Gamboa, 50 m, 23 Oct 1973, *Nee 7547*, det. Dauphin Jun 2017 (MO-5243734! https://tropicos.org/specimen/90119103, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 900 m, *Salazar Allen & Gradstein 9245* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, Estación del INRENARE, 900 m, *Salazar Allen & Gradstein 9212* (PMA, GOET, U, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Shattuck 568 p.p.* (**Haynes 1933** as *Ceratolejeunea integrifolia*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, 7 Dec 1931, *Shattuck*, det. Dauphin Jun 2017 (MO-5247472!, **this publication**); La Chorrera distrito, Barro Colorado Island, *Shattuck 4CH, 568 p.p.* (F, PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3052, 3075, 3103, 3134* (CR, PMA, **Dauphin et al. 2022**). *PANAMA: Panamá distrito, along River Chagres, between junction with River Pequeni and River Indio, 70 m, 5 Dec 1934, *Steyermark & Allen 16802*, det. Dauphin Jun 2017 (MO-5139405! https://tropicos.org/specimen/90076803, **this publication**); Panamá distrito, along River Chagres, between junction with River Pequeni and River Indio, 70 m, 5 Dec 1934, *Steyermark & Allen 16809 p.p.*, det. Dauphin Jun 2017 (MO-6699928! https://tropicos.org/specimen/100988579, **this publication**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′36″W, 580 m, 22 Jan 1994, *Dauphin 980*, det. G. Dauphin Apr 2021 (USJ-47188!, CR-4468429!, W-0207423! https://w.jacq.org/W0207423, **this publication**); Fila al este de Bahía Chatham, 5°32′57″N, 87°03′56″W, 200 m, 10 Mar 1990, *Dauphin 1189*, det. G. Dauphin Mar 2021 (USJ-47187!, CR-4468420!, W!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 25 Jan 1990, *Dauphin 1077*, det. G. Dauphin Apr 2021 (USJ-47190!, CR-4468421!, W!, **this publication**); Fila sobre Valle

Wafer, 5°32′57″N, 87°03′56″W, 180 m, 25 Jan 1990, *Dauphin 1078*, det. G. Dauphin Apr 2021 (USJ-47185!, CR-4468415!, W-0207420!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′36″W, 180 m, 26 Jan 1994, *Dauphin 1082*, det. G. Dauphin Apr 2021 (USJ-47184!, CR-4468418!, W-0207419! https://w.jacq.org/W0207419, **this publication**); Serranías al NE de la Isla, 5°32′57″N, 87°03′36″W, 200 m, 30 Jan 1994, *Dauphin 1106*, det. G. Dauphin Apr 2021 (USJ-47179!, CR-4468416!, W-0207418! https://w.jacq.org/W0207418, **this publication**); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 29 Jan 1990, *Dauphin 1108*, det. G. Dauphin Apr 2021 (USJ-47641!, CR-4468337!, **this publication**); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 29 Jan 1990, *Dauphin 1112*, det. G. Dauphin Apr 2021 (USJ-47248!, CR-44688318!, **this publication**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea panamensis Fossatti, C.J.Bastos et A.R.Benitez, *Phytotaxa* 459(3): 248, 2020 (Fossatti et al. 2020). Holotype: Panama. Chiriquí: Parque Internacional La Amistad (PILA), Tierras Altas, 8°53′4.21”N, 82°36′59.7”W, 2,665 m, on canopy branches of *Alnus acuminata* Kunth in montane rainforest, 17 Sep 2018, *I. Fossati 001* (UCH).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, 8°53′4.21″N, 82°36′59.7″W, 2,665 m, 17 Sep 2018, *Fossatti 001* (UCH, **TYPE, Fossatti et al. 2020**; **Söderström et al. 2022a**).

Not found outside Central America.

Ceratolejeunea patentissima (Hampe et Gottsche) A.Evans, *Bull. Torrey Bot. Club* 32(6): 286, 1905 (Evans 1905a).

≡*Lejeunea patentissima* Hampe et Gottsche, *Linnaea* 25(3): 355, 1853 (Hampe and Gottsche 1852). Type: Puerto Rico.

COSTA RICA. S. loc. (Lavocat Bernard et al. 2009; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Alverson & Dauphin 2875* (CR, **Dauphin 2005**). PUNTARENAS: Osa cantón, Península de Osa, Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9333b* (GOET, U, USJ, **Gradstein et al. 1994**; **Dauphin 2000, 2003, 2005**; **Scheben et al. 2016**; **Sierra et al. 2018b**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc., *Gradstein & Salazar Allen 9249d* (JE, **Dauphin 2000, 2003**); S. loc., *Salazar Allen & Gradstein* (JE, **Dauphin et al. 2006**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 722 p.p.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). *PANAMA: Panamá distrito, 4.5 km N of Lago Cerro Azul, vicinity of Finca Vega, 675 m, 17 Sep 1973, *Nee 7016*, det. Dauphin May 2016 (MO-5228021! https://tropicos.org/specimen/90102777, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea pungens Steph., *Sp. Hepat. (Stephani)* 5: 434, 1913 (Stephani 1913). Type: Ecuador.

PANAMA. VERAGUAS: Santa Fe distrito, Cerro Los Gringos, Alto de Piedra, 1 May 2005, *I. Ramírez 146* (PMA, **Dauphin 2007**).

Also reported from Western South America.

Ceratolejeunea rubiginosa Steph., *Hedwigia* 34(5): 237, 1895 (Stephani 1895c). Type: Cuba.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 507* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Linares and Uribe 2002; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Van Melick 2016; Stotler and Crandall-Stotler 2017; Sierra et al. 2019b; Gradstein 2021). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110513* (UC, **Norris et al. 2017**). HEREDIA: Sarapiquí cantón, La Selva, *Lücking 97-9* (**Dauphin 2000, 2003, 2005**).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 464* (USJ, **Bernecker-Lücking 2000**); Entre Chatham y Wafer, 5°32′57″N, 87°03′36″W, 220 m, *Dauphin 1121*, det. G. Dauphin Apr 2021 (USJ-47182!, CR-4468735!, W-0207425! https://w.jacq.org/W0207425, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 25 Jan 1990, *Dauphin 1076*, det. G. Dauphin Apr 2021 (USJ-47180!, CR-4468428!, W!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 15 Feb 1994, *Dauphin 1076* (USJ, **Dauphin 1995, 1999, 2000, 2003, 2005**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 25 Jan 1990, *Dauphin 1054.2*, det. G. Dauphin Jan 2021 (USJ-47222!, CR-4468295!, **this publication**); Río Genio, 5°32′57″N, 87°03′36″W, 10 m, 26 Jan 1994, *Dauphin 1055*, det. G. Dauphin Apr 2021 (USJ-47186!, CR-4468427!, W-0207427! https://w.jacq.org/W0207427, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 509* (ULM, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 15 Feb 1994, *Dauphin 1055* (USJ, **Dauphin 1995, 1999, 2000, 2003, 2005**); S. loc. (Lavocat Bernard et al. 2009; Schäfer-Verwimp and Van Melick 2016; Stotler and Crandall-Stotler 2017); S. loc., *Dauphin 1121* (USJ, **Dauphin 2000, 2003, 2005**); S. loc., *Stewart 1354 p.p.* (GOET, **Dauphin 2000, 2003, 2005**); Yglesias B, 150–250 m, Apr 1992, *Lücking 292* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Ceratolejeunea spinosa (Gottsche) Steph., *Hedwigia* 34(5): 238, 1895 (Stephani 1895c).

≡*Lejeunea spinosa* Gottsche, *Syn. Hepat.* 3: 402, 1845 (Gottsche et al. 1845a). Type: Saint Kitts.

?GUATEMALA. ?EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Ceratolejeunea* aff. *spinosa*). ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Ceratolejeunea* aff. *spinosa*). Note: We are not aware of any positively identified specimen from Guatemala.

***HONDURAS.** *ATLÁNTIDA: La Ceiba municipio, Pico Bonito National Park, 86°55′W, 15°40′N, 200–400, 29 Dec 2001, *Dauphin & Ferrufino 3011* (CR!, **this publication**).

COSTA RICA. S. loc. (Fulford 1987; Gradstein and Uribe 2016; Sierra et al. 2019b); S. loc., *Schäfer-Verwimp & Holz SV/H-0485* (JE, **Scheben et al. 2016**; **Sierra et al. 2018b**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110278* (UC, **Norris et al. 2017**); San Ramón cantón, Los Ángeles, *Brenes 14857* (C, **Fulford 1945**; **Morales 1991**). HEREDIA: Sarapiquí cantón, Finca el Plástico, Sendero el Tigre, *Dauphin 2172*, *2174* (CR, GOET, **Dauphin 2000, 2003, 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-594* (**Dauphin 2000, 2003, 2005**). PUNTARENAS: Monteverde, 480–600 m, *James, W. 1971-34* (MO-616145, **Dauphin 2000, 2003, 2005**).

PANAMA. S. loc. (Sierra et al. 2019b). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Spörle* (PMA, **Stotler et al. 1998**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, *Salazar Allen & Gradstein 9232*, *9278*, *9300* (GOET, **Dauphin 2000, 2003**; **Dauphin et al. 2006**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). VERAGUAS: Santa Fe distrito, Escuela Agricola Alto Piedra, *Antonio 3945b* (GOET, **Dauphin 2000, 2003**; **Dauphin et al. 2006**).

***COCOS I.** Cerro Pelón, 5°32′57″N, 87°03′56″W, 400 m, *Dauphin 1146 p.p.*, det. G. Dauphin Nov 2020 (CR!, **this publication**); Cerro Pelón, 5°32′57″N, 87°03′56″W, 400 m, 9 Feb 1994, *Dauphin 1146 p.p.*, det. G. Dauphin Nov 2020 (CR!, **this publication**); S. loc. (Dauphin 1995).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea (Spruce) Steph., *Bot. Gaz.* 15(11): 284, 1890 (Stephani 1890d).

Cheilolejeunea acutangula (Nees) Grolle, *J. Hattori Bot. Lab.* 45: 173, 1979 (Grolle 1979a).

≡*Jungermannia acutangula* Nees, *Fl. Bras. (Martius)* 1(1): 357, 1833 (Nees 1833b). Type: Brazil.

=*Lejeunea choachina* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 156, 1864 (Gottsche 1864), syn. fide Gradstein and Bastos (2021). Type: Colombia.

≡*Cheilolejeunea choachina* (Gottsche) Gradst., *Mem. New York Bot. Gard.* 84: 69, 1999 (Gradstein 1999a).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 600 m, 2002 (**Andersohn 2004**). HUEHUETENANGO: S. loc., *Pérez 1209* (USCG, Pérez 2009).

COSTA RICA. SAN JOSÉ: Dota cantón, San Gerardo, 2,100–2,150 m, *Schäfer-Verwimp & Holz SV/H-0246/B* (hb. Schäfer-Verwimp, **Gradstein and Bastos 2021**); Dota cantón, San Gerardo, 2,100–2,150 m, *Schäfer-Verwimp & Holz SV/H-0261/B* (hb. Schäfer-Verwimp, **Gradstein and Bastos 2021**); [Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Schäfer-Verwimp & Holz SV/H-0161/A* (M, **Heinrichs et al. 2014b** as *Cheilolejeunea choachina*; **Schäfer-Verwimp et al. 2014** as *Cheilolejeunea choachina*; rejected as *Cheilolejeunea lobulata* by Gradstein and Bastos 2021]).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 560 p.p.* (PMA, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COLÓN: Portobelo distrito, Playa Langosta, *Salazar Allen 868* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea adnata (Kunze ex Lehm.) Grolle, *J. Bryol.* 9(4): 529, 1978 (Grolle 1977b).

≡*Jungermannia adnata* Kunze ex Lehm., *Nov. Stirp. Pug.* 6: 46, 1834 (Lehmann 1834). Type: Cuba.

≡*Pycnolejeunea adnata* (Kunze ex Lehm.) Steph., *Sp. Hepat. (Stephani)* 5: 612, 1914 (Stephani 1914).

=*Lejeunea decidua* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 257, 1884 (Spruce 1884), syn. fide Grolle (1977b). Type: Brazil.

≡*Cheilolejeunea decidua* (Spruce) A.Evans, *Bull. Torrey Bot. Club* 32(4): 188, 1905 (Evans 1905b).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 600 m, 2002 (**Andersohn 2004**).

***BELIZE.** *BELIZE: Tropical Education Center Mile 28–29 on Western Highway, 17°21′N, 88°32′W, 10 m, 5 Dec 1996, *Allen 18001*, det. Dauphin Jun 2017 (MO-5228024! http://tropicos.org/specimen/90102218, **this publication**). TOLEDO: Punta Gorda, Feb 1932, det. Dauphin May 2017 (MO-5223878! http://tropicos.org/specimen/90093885, **this publication**).

HONDURAS. S. loc. (Jovet-Ast 1957 as *Cheilolejeunea decidua*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54369*, *54380*, *55128*, *etc.* (F, **Herzog 1951** as *Pycnolejeunea adnata* and *Cheilolejeunea decidua*).

***EL SALVADOR.** *SAN SALVADOR: Nejapa municipio, El Boquerón, 8 Apr 2010, *Búcaro H110*, det. Dauphin 2016 (MHES!, **this publication**); Nejapa municipio, El Boquerón,

8 Apr 2010, *Búcaro H111*, det. Dauphin 2016 (MHES!, **this publication**).

*__NICARAGUA.__ *ATLÁNTICO NORTE: Siuna municipio, road from Siuna to El Dos, 13°46′N, 84°47′W, 12 Dec 1980, *Stevens 18721*, det. Dauphin May 2017 (MO-5238368! http://tropicos.org/specimen/90108645, **this publication**). *CHONTALES: Cuapa municipio, road between Rio Bizcocho and Rio el Jordan, 12°15′N, 85°16′W, 18 Dec 1983, *Stevens 22594B p.p.*, det. Dauphin May 2017 (MO-6699910! http://tropicos.org/specimen/100988664, **this publication**). *GRANADA: Granada municipio, W slope of Volcán Mombacho, 11°49–50′N, 85°58′W, 1 Oct 1977, *Stevens 4384 p.p.*, det. Dauphin May 2017 (MO-6699914! http://tropicos.org/specimen/100988657, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp 1999). ?GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700, 27 Aug 2003, *Dauphin et al. 3310* (CR, Dauphin and Grayum 2005 as *Cheilolejeunea* cf. *adnata*). Note: We are not aware of any positively identified specimen from Guanacaste. LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-142* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero, 2 Aug 1993, *Timme 11275*, det. Dauphin Jun 2017 (MO-6690014! https://tropicos.org/specimen/100861269, **this publication**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Lee's Tract, 10 Nov 1970, *James 1970-46*, det. Dauphin Jun 2017 (MO-6168135!, **this publication**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 6 Nov 1970, *James 1970-25*, det. Dauphin Jun 2017 (MO-6163050!, **this publication**); Osa cantón, Osa Peninsula, Rincón, trail Boscosa to Cerro Chocuaco, 300 m, *Gradstein & Dauphin 9317* (U, USJ, **Gradstein et al. 1994**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc. (Jovet-Ast 1957 as *Cheilolejeunea decidua*; Stotler et al. 1998). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Caswell-Levy 1036*, det. Caswell-Levy Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). *CHIRIQUÍ: Gualaca distrito, Reserva Forestal Fortuna, road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 29 Mar 2013, *Schäfer-Verwimp 34355*, det. Dauphin Jun 2017 (MO-6690270!, **this publication**). PANAMA WEST: Chepo distrito, Bayano Lake, Maje Island, *Salazar Allen 733* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Cheilolejeunea decidua*; **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 1542a* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller 24–25, *Salazar Allen & Chung 4508* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, near laboratory, *Salazar Allen & Chung 4728* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**).

COCOS I. Bahía Yglesias, Feb 1976, *Gómez-Pignataro 6579 p.p.*, det. Dauphin May 2017 (MO-6699948!, **this publication**); Fila entre Bahía Wafer y Chatham, sobre ladera que va hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, *Estrada et al. 6135 p.p.*, det. G. Dauphin May 2021 (CR-4468338!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, *Dauphin 1069*, det. G. Dauphin Mar 2021 (USJ-47224!, CR!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, *Dauphin 924*, det. G. Dauphin Mar 2021 (USJ-47225!, CR-4468334!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, *Lücking 92-284* (USJ, **Dauphin 1995, 1999, 2005**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 284* (USJ, **Bernecker-Lücking 2000**); S. loc. (Fosberg and Klawe 1966 as *Cheilolejeunea decidua*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Cheilolejeunea decidua*); Wafer Bay, 28 Jun 1932, *Howell 226 p.p., 227, 277, etc.* (CAS, **Clark 1953a** as *Cheilolejeunea decidua*); Yglesias C, 250–350 m, Apr 1992, *Lücking 285* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea aneogyna (Spruce) A.Evans, *Trans. Connecticut Acad. Arts* 10(8): 440, 1900 (Evans 1900a).

≡*Lejeunea aneogyna* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 254, 1884 (Spruce 1884). Type: Venezuela.

*__BELIZE.__ *TOLEDO: Punta Gorda, det. Dauphin May 2017 (MO-5223877! http://tropicos.org/specimen/90093900 in packet with *Pycnolejeunea macroloba*, **this publication**).

*__NICARAGUA.__ *BOACO: Camoapa municipio, 5 km N of El Zancudo empalme, road from Cuapa to Camoapa, 12°20′02″N, 85°23′57″W, 535 m, 10 Dec 2012, *Stevens 33360 p.p.*, det. Dauphin May 2017 (MO-6699936! http://tropicos.org/specimen/100988173, **this publication**).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016; Bastos 2017). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,630 m, *Schäfer-Verwimp & Verwimp 34414/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34682* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34759/A, 34761* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34726*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**). *COLÓN: Colón distrito, trail to triangulation station (200 m, *Dodge 186*, det. Dauphin Jun 2017 (MO-5243729! https://tropicos.org/specimen/90119098, **this publication**).

*PANAMA: Chepo distrito, Sabana, 20 Jan 1935, *Hunter 205*, det. Dauphin Jun 2017 (MO-5243731!, **this publication**); road between Panama and Chepo, 29 Nov 1934, *Dodge 8598*, det. Dauphin Jun 2017 (MO-5243730!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea asperrima (Steph.) Grolle, *J. Hattori Bot. Lab.* 58: 197, 1985 (Grolle 1985).

≡*Taxilejeunea asperrima* Steph., *Biblioth. Bot.* 87(2): 259, 1916 (Stephani 1916b). Type: Bolivia.

COSTA RICA. S. loc., *van Melick 214551* (M, **Heinrichs et al. 2014b; Schäfer-Verwimp et al. 2014; Bechteler et al. 2016a, 2016c; Zhu et al. 2017, 2018b; Zhu and Shu 2018**).

Also reported from Northern South America, Western South America.

Cheilolejeunea aurifera (R.M.Schust.) W.Ye, R.L.Zhu et Gradst., *Cryptog. Bryol.* 36(4): 325, 2015 (Ye et al. 2015).

≡*Aureolejeunea aurifera* R.M.Schust., *Phytologia* 39(6): 429, 1978 (Schuster 1978b). Type: Venezuela.

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Aureolejeunea aurifera*; **Holz and Gradstein 2005b** as *Aureolejeunea aurifera*); S. loc. (Gradstein and Holz 2005 as *Aureolejeunea aurifera*; Bastos and Gradstein 2020a, 2020b; Gradstein 2021). CARTAGO: Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, *Holz CR 00-812* (GOET, **Holz et al. 2001** as *Aureolejeunea aurifera*; **Dauphin 2005** as *Aureolejeunea aurifera*; **Ye et al. 2015** as *Aureolejeunea aurifera*); Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 14 Nov 1999, *Holz CR 00-605* (CR, GOET, **Holz et al. 2001** as *Aureolejeunea aurifera*; **Dauphin 2005** as *Aureolejeunea aurifera*); Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 14 Nov 1999, *Holz CR 99-598* (CR, GOET, **Holz et al. 2001** as *Aureolejeunea aurifera*; **Groth-Malonek et al. 2004** as *Aureolejeunea aurifera*; **Dauphin 2005** as *Aureolejeunea aurifera*). SAN JOSÉ: Dota cantón, Cerro Sákira, Pan-American Highway km 87, 9°35′N, 83°46′W, 22 Mar 2003, *Holz CR 00-696* (GOET, MO-5282862, **Wilson et al. 2004, 2007**, both as *Aureolejeunea aurifera*; **Gradstein et al. 2006b** as *Aureolejeunea aurifera*; **Heinrichs et al. 2012c** as *Aureolejeunea aurifera*; **Dong et al. 2013** as *Aureolejeunea aurifera*; **Ye and Zhu 2018**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Cheilolejeunea beyrichii (Lindenb.) M.E.Reiner, *Nova Hedwigia* 83(3/4): 474, 2006 (Reiner-Drehwald 2006).

≡*Lejeunea beyrichii* Lindenb., *Syn. Hepat.* 3: 371, 1845 (Gottsche et al. 1845a). Type: Brazil.

≡*Euosmolejeunea beyrichii* (Lindenb.) Steph., *Hedwigia* 29(2): 82, 1890 (Stephani 1890c).

GUATEMALA. S. loc. (Schäfer-Verwimp 2014; Gradstein and Uribe 2016; Bastos and Gradstein 2020a, 2020b; Gradstein 2021). ALTA VERAPAZ: Cobán municipio, Aragón, 1,700 m, 18 Sep 2002, *Andersohn* (GOET, **Reiner-Drehwald 2006**).

HONDURAS. S. loc. (Schäfer-Verwimp 2014). ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, 15°38′N, 86°51′W to 15°39′N, 86°52′W, 20 Apr 1996, *Allen 17393* (GOET, **Dong et al. 2013**; **Ye et al. 2013, 2015**).

COSTA RICA. CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 64732* (**Morales 1991; Dauphin 2005**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 945 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30787* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road. 9°13.4–5′N, 79°22.7–9′W, 970–995 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30733, 30736* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 968*, det. G. Dauphin Jan 2021 (USJ-47226!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 22 Jan 1994, *Dauphin 968*, det. G Dauphin Jan 2021 (CR!, **this publication**); Cuenca de la Quebrada Pittier, rumbo a Bahía Yglesias, 5°31′81.5″N, 87°03′32.3″W, 312 m, 30 Nov 2013, *Estrada et al. 6180*, det. G. Dauphin May 2021 (CR-4468364!, **this publication**); Río Genio, 5°32′57″N, 87°03′36″W, 10 m, 26 Jan 1994, *Dauphin 1054*, det. G. Dauphin Jan 2021 (USJ-47222!, CR-4468147!, W-0207408! https://w.jacq.org/W0207408, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 25 Jan 1990, *Dauphin 1068*, det. G. Dauphin Mar 2021 (USJ-47223!, CR!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 26 Jan 1994, *Dauphin 1054 p.p.*, det. G. Dauphin Jan 2021 (USJ-47222!, **this publication**).

Also reported from Northern South America, Western South America, Brazil.

Cheilolejeunea comans (Spruce) R.M.Schust., *Phytologia* 45(5): 431, 1980 (Schuster 1980b).

≡*Lejeunea comans* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 246, 1884 (Spruce 1884). Type: Venezuela.

?GUATEMALA. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Cheilolejeunea* aff. *comans*). Note: We are not aware of any positively identified specimen from Guatemala.

***COSTA RICA.** *PUNTARENAS: Monteverde cantón, Reserva Biológica Santa Elena, 10°20′N, 84°48′W, 26 Mar 1992, *Lyon 546*, det. Dauphin 2017 (MO-4411437! https://www.tropicos.org/specimen/90029478, **this publication**).

PANAMA. S. loc. (Bastos and Gradstein 2020a, 2020b). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Cordillera Talamanca, road from El Volcán to Rio Sereno, 8°49′N, 82°41.5″W, 3 Apr 2013, *Schäfer-Verwimp 34680/A* (hb. Schäfer-Verwimp, ALCB, **Bastos 2017**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea conchifolia (A.Evans) W.Ye et R.L.Zhu, *J. Bryol.* 32(4): 280, 2010 (Ye and Zhu 2010).

≡*Archilejeunea conchifolia* A.Evans, *Mem. Torrey Bot. Club* 8(2): 128, 1902 (Evans 1902b). Type: USA.

=*Leucolejeunea nana* S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 326, 1967 (Winkler 1967), syn. nov. Holotype: El Salvador, Santa Ana, Hacienda Montecristo, Cerro Miramundo, 2,240 m, 23 May 1962, *Winkler A/5/4* (ULM). Note: *Leucolejeunea nana* was recognized as "fragment of a juvenile shoot of *Cheilolejeunea conchifolia*" (S. R. Gradstein, Meise Botanic Garden, personal communication) and is here published as a new synonym with Gradstein's approval.

EL SALVADOR. S. loc. (Schuster 2006 as *Leucolejeunea nana*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,350 m, 23 May 1962, *Winkler A/26/10* (ULM, **Winkler 1967** as *Leucolejeunea nana*); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,280 m, 23 May 1962, *Winkler A/5/4* (ULM, **TYPE** of *Leucolejeunea nana*, **Winkler 1967** as *Leucolejeunea nana*; **Geissler and Bischler 1985** as *Leucolejeunea nana*; **Gradstein and Geissler 1997** as *Leucolejeunea nana*).

Also reported from South-Central USA, Southeastern USA, Brazil, Southern South America.

Cheilolejeunea discoidea (Lehm. et Lindenb.) R.M.Schust. et Kachroo, *J. Linn. Soc., Bot.* 56(368): 509, 1961 (Kachroo and Schuster 1961).

≡*Jungermannia discoidea* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 47, 1834 (Lehmann 1834). Type: St. Vincent.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006 as *Cheilolejeunea* cf. *discoidea*) Note: We are not aware of any positively identified report from Alta Verapaz. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, 750–800 m, 1 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0392b* (ALCB, **Bastos 2017**). LIMÓN: Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, *Egremy 379*, det. Dauphin (CR, **Dauphin 2005**). PUNTARENAS: Buenos Aires, *Kaczmarech 205*, det. Dauphin (CR, **Dauphin 2005**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc., *Schäfer-Verwimp & Verwimp 24530* (M, **Heinrichs et al. 2014b**); S. loc., *Schäfer-Verwimp & Verwimp 34530* (M, **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a, 2016c**; **Zhu et al. 2017**, **Zhu 2018a, 2018b, 2019**; **Zhu and Shu 2018**). CHIRIQUÍ: Gualaca distrito, entrance to Escuela Los Planes (along road from Chiriquí to Chiriquí Grande), 8°37.8′N, 82°12.8′W, 980 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34530* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31040* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3231* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Laboratory area, 2003, *Dauphin 3231* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34325* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea filiformis (Sw.) W.Ye, R.L.Zhu et Gradst., *Cryptogamie, Bryologie* 36(4): 325, 2015 (Ye et al. 2015) var. ***filiformis***.

≡*Jungermannia filiformis* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

≡*Omphalanthus filiformis* (Sw.) Nees, *Syn. Hepat.* 2: 304, 1845 (Gottsche et al. 1845b).

≡*Omphalolejeunea filiformis* (Sw.) Steph., *Hedwigia* 27(11/12): 285, 1888 (Stephani 1888a), nom. inval. (ICN2018 Art. 35.1; genus not valid).

=*Omphalanthus filiformis γ fuscus* Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 304 (Gottsche et al. 1845b) "*fusca*." Type: St. Vincent.

≡*Omphalanthus filiformis* var. *fuscus* (Gottsche, Lindenb. et Nees) Hampe, *Linnaea* 24(3): 303, 1851 (Hampe 1851b) "*fusca*."

=*Omphalanthus grandistipulus* Steph., *Biblioth. Bot.* 21(87): 248, 1916 (Stephani 1916b). Type: Bolivia.

=*Omphalanthus filiformis* f. *ramis-veneris-elongatis* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 130, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Prov. San Jose, Las Nubes, 1,500–1,900 m, *Standley 38403* (JE?, US-04544582 http://n2t.net/ark:/65665/3fa4b04bf-2bf0-47c9-9f19-0194c053bbaf).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,100–1,300 m, 2002 (**Andersohn 2004** as *Omphalanthus filiformis*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 157* (USCG, **Freire et al. 2013** as *Omphalanthus filiformis*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Omphalanthus filiformis*).

BELIZE. CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°48′45″N, 88°37′13″W, 1,140 m, 9 Dec 1993, *Allen 15317*, det. Dauphin May 2017 (MO-4421607! https://tropicos.org/specimen/90019444, **Whittemore and Allen 1996** as *Omphalanthus filiformis*). TOLEDO: S. loc., *Meadows 6* (MO, **Whittemore and Allen 1996** as *Omphalanthus filiformis*); S. loc., Dec 1993, *Allen 15318* (BRH, MO, **Whittemore and Allen 1996** as *Omphalanthus filiformis*).

***HONDURAS.** *COMAYAGUA: San Juanillo, Cordillera de Montecillos Biological Reserve Forest, 14°30′N, 87°53′W, 1,700–2,000 m, 3 Jun 1993, *Liesner 26780 p.p.*, det.

Dauphin May 2017 (MO-6699916! http://tropicos.org/specimen/90100338, **this publication**).

EL SALVADOR. S. loc. (Lücking 1995 as *Omphalanthus filiformis*). CHALATENANGO: San Ignacio municipio, Cantón Río Chiquito, Cerro Pital, Finca de los Señores Portillo, Cima del Cerro Pital, 14°23′N, 89°08′W, 2,730 m, 21 Nov 1993, *Sipman et al. 37650* (NY, **Bastos 2017**). SANTA ANA: Calle a Miramundo #20, 21 Sep 2016, *Búcaro H71* (CR!, L, **this publication**); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/11/2*, *A/2/4*, *A/25/3*, *A/26/3*, *A/29/6* (**Winkler 1967** as *Omphalanthus filiformis*).

***NICARAGUA.** *ESTELÍ: Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 24 Nov 1979, *Stevens & Grijalva 16299 p.p.*, det. Dauphin May 2017 (MO-6699901! http://tropicos.org/specimen/100988686, **this publication**). *JINOTEGA: Ridge between Cerro Bravo and Cerro Picacho, 26 May 1985, *Davidse et al. 30513*, det. Dauphin May 2013 (MO-5274417! http://tropicos.org/specimen/90132440, **this publication**). *MATAGALPA: Cordillera Dariénse, 20 km N of Matagalpa, 17 Sep 1981, *Balázs 81/12/G*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Omphalanthus filiformis*; Holz 2006 as *Omphalanthus filiformis*); Cordillera de Talamanca, *Kappelle 699* (CR, **Kappelle 1996** as *Omphalanthus filiformis*); S. loc. (Cole 1982, 1983, both as *Omphalanthus filiformis*; Gradstein 1999a as *Omphalanthus filiformis*; Dauphin 2005 as *Omphalanthus filiformis*; Gradstein and Holz 2005 as *Omphalanthus filiformis*); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851**); S. loc., 8,000 ft (2,438 m), *Oersted* (S, NY, **Hampe 1851b** as *Omphalanthus filiformis* var. *fuscus*; **Polakowsky 1879**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Omphalanthus filiformis*); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110486* (UC, **Norris et al. 2017** as *Omphalanthus filiformis*). CARTAGO: Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 51009* (**Herzog 1951** as *Omphalanthus filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 51522* (**Herzog 1951** as *Omphalanthus grandistipulus*; **Morales 1991** as *Omphalanthus grandistipulus*; **Dauphin 2005** as *Omphalanthus grandistipulus*); El Guarco cantón, Cerro Buenavista, 9°36′00″N, 83°50′00″W, 27 Feb 1996, *Dauphin 2661*, det. G. Dauphin Nov 2020 (CR!, **this publication**); La Estrella, *Standley 39315* (**Herzog 1951** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Eakin 173*, *272*, *275*, det. Gradstein (FLAS, **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Turrialba cantón, Angostura, *Oersted 305* (**Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879** as *Omphalanthus filiformis*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1895* (CR, **Dauphin 2005** as *Omphalanthus filiformis*). HEREDIA: Rancho Flores forest, *Pittier 6028* (**Stephani 1893c** as *Omphalolejeunea filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); S. loc., *Pittier 6061* (**Stephani 1893c** as *Omphalolejeunea filiformis*; **Morales 1991** as *Omphalanthus filiformis*); S. loc., *Standley & Valerio 51414* (NY, **Thiers 1986** as *Omphalanthus filiformis*); San Isidro cantón, Cerro Caricias, 2,000–2,400 m, *Standley 49872*, *50109*, *52251* (**Herzog 1951** as *Omphalanthus filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); San Rafael cantón, vicinity of Las Lajas, 2,000–2,400 m, *Standley* (**Herzog 1951** as *Omphalanthus filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Sarapiquí cantón, Salto La Paz, *Woodruff* (FLAS, **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Omphalanthus filiformis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-193*, *92-381*, *92-485*, *92-548*, *94-28* (hb. Lücking, **Lücking 1995** as *Omphalanthus filiformis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Omphalanthus filiformis*). PUNTARENAS: Monteverde, <1,500 m (Morales 1991 as *Omphalanthus filiformis*; Dauphin 2005 as *Omphalanthus filiformis* and *Omphalanthus grandistipulus*); Monteverde cantón, along South Line, 16 Mar 1969, *James, W. 1969-67*, *1969-73* (R, **Reed and Robinson 1971** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Omphalanthus filiformis*); Monteverde cantón, road to Monteverde Biological Station, 5 Aug 1993, *Timme 11432*, det. Dauphin May 2000 (MO-66900001!, **this publication**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Omphalanthus grandistipulus* and *Omphalanthus filiformis*); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Omphalanthus filiformis*); Monteverde, Oct 1963, *James, W. 9* (R, **Reed and Robinson 1971** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Monteverde, 29 Dec 1964, *James, J. 30* (R, **Reed and Robinson 1971** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); S. loc. (**Merwin et al. 2001** as *Omphalanthus filiformis* and *Omphalanthus grandistipulus*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Omphalanthus filiformis*); Dota cantón, San Gerardo (Dauphin 2005 as *Omphalanthus filiformis*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Omphalanthus filiformis*); Los

Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Omphalanthus filiformis*); Moravia cantón, La Hondura, *Griffin et al. 330*, det. Gradstein (FLAS, **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51808*, *51815*, *51817*, *51818*, *51851* (**Herzog 1951** as *Omphalanthus filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Moravia cantón, La Palma, *Morales 388*, *390* (FLAS, **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Moravia cantón, La Palma, 1,600 m, *Standley 32894* (**Herzog 1951** as *Omphalanthus filiformis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Vásquez de Coronado cantón, Las Nubes, *Griffin & Morales A54* (USJ, FLAS, **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Vásquez de Coronado cantón, Las Nubes, *Morales 367* (**Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38403* (**TYPE** of *Omphalanthus filiformis* f. *ramis-veneris-elongatis*, **Herzog 1951** as *Omphalanthus filiformis* f. *ramis-veneris-elongatis*; **Morales 1991** as *Omphalanthus filiformis*; **Dauphin 2005** as *Omphalanthus filiformis*).

PANAMA. CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30957* (JE, **Schäfer-Verwimp 2014** as *Omphalanthus filiformis*); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna on route to Soledad, 1,100 m, *Salazar Allen et al. 2104* (PMA, **Stotler et al. 1998** as *Omphalanthus filiformis*); Gualaca distrito, Fortuna, 1,000 m, *Salazar Allen et al. 522*, *525* (PMA, **Stotler et al. 1998** as *Omphalanthus filiformis*); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 2445* (PMA, **Stotler et al. 1998** as *Omphalanthus filiformis*); San Felix, *Croat 33064* (MO, **Stotler et al. 1998** as *Omphalanthus filiformis*); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34724* (JE, **Schäfer-Verwimp 2014** as *Omphalanthus filiformis*); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34263/F* (JE, **Schäfer-Verwimp 2014** as *Omphalanthus filiformis*).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-281*, *92-282*, *92-283* (hb. Lücking, **Lücking 1995** as *Omphalanthus filiformis*); S. loc. (Dauphin 1995, 1999, both as *Omphalanthus filiformis*); Yglesias E, 500–634 m, Apr 1992, *Lücking 282* (hb. Bernecker, **Bernecker-Lücking 2000** as *Omphalanthus filiformis*); Yglesias E, 500–634 m, Apr 1992, *Lücking 283* (USJ, **Bernecker-Lücking 2000** as *Omphalanthus filiformis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea filiformis var. ***platycoleus*** (Herzog) W.Ye, R.L.Zhu et Gradst., *Cryptogamie Bryologie* 36(4): 325, 2015 (Ye et al. 2015).

≡*Omphalanthus platycoleus* Herzog, *Feddes Repert. Spec. Nov. Regni Veg.* 57(1/2): 171, 1955 (Herzog 1955a). Type: Colombia.

≡*Omphalanthus filiformis* var. *platycoleus* (Herzog) Gradst., *Phytotaxa* 76(3): 46, 2013 (Gradstein 2013a).

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013 as *Omphalanthus platycoleus*; Bastos and Gradstein 2020a, 2020b; Fuertes and Prada 2020 as *Omphalanthus filiformis* var. *platycoleus*; Gradstein 2021). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 50014 p.p.* (**Herzog 1951** as *Omphalanthus platycoleus*; **Morales 1991** as *Omphalanthus platycoleus*).

Also reported from Northern South America, Western South America, Southern South America.

Cheilolejeunea holostipa (Spruce) Grolle et R.L.Zhu, *Taxon* 50(4): 1071, 2001 (Grolle et al. 2001).

≡*Lejeunea holostipa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 171, 1884 (Spruce 1884). Type: Brazil.

≡*Cyrtolejeunea holostipa* (Spruce) A.Evans, *Bull. Torrey Bot. Club* 30(10): 553, 1903 (Evans 1903c).

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 308* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 46* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Cyrtolejeunea holostipa*).

BELIZE. S. loc. (**Fulford 1938** as *Cyrtolejeunea holostipa*; Whittemore and Allen 1996 as *Cyrtolejeunea holostipa*).

?HONDURAS. S. loc. (Fulford and Sharp 1990 as *Cyrtolejeunea holostipa*; Lücking 1995 as *Cyrtolejeunea holostipa*; Schäfer-Verwimp 1999 as *Cyrtolejeunea holostipa*; Ilkiu-Borges

2000 as *Cyrtolejeunea holostipa*; Ilkiu-Borges and Lisbôa 2002a, 2002b, both as *Cyrtolejeunea holostipa*; Bastos 2004; Schäfer-Verwimp and Pócs 2009). Note: We are not aware of any firsthand report of *Cheilolejeunea holostipa* from Honduras, although it probably occurs there. The current reports are possibly all based on "British Honduras," that is, Belize.

COSTA RICA. S. loc. (Schäfer-Verwimp 1999 as *Cyrtolejeunea holostipa*; Ilkiu-Borges 2000 as *Cyrtolejeunea holostipa*; Ilkiu-Borges and Lisbôa 2002b as *Cyrtolejeunea holostipa*; Bastos 2004; Schäfer-Verwimp and Pócs 2009). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 23 Mar 2009, *Norris 111067* (UC, **Norris et al. 2017** as *Lejeunea holostipa*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3322*, *3331*, *3342* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); Liberia cantón, Rincón de La Vieja National Park, 750–800 m, 1 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0402b* (hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-182* (USJ, **Gradstein et al. 1994** as *Cyrtolejeunea holostipa*; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-9*, *92-182*, *92-376*, *92-419*, *92-455*, *92-487*, *92-557*, *92-575*, *92-596* (hb. Lücking, **Lücking 1995** as *Cyrtolejeunea holostipa*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Cyrtolejeunea holostipa*). PUNTARENAS: Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Cyrtolejeunea holostipa*); Monteverde, *Sillett 42586* (**Dauphin 2005**); Monteverde, 1,550 m, *Sillett 8-5* (U, **Gradstein et al. 1994** as *Cyrtolejeunea holostipa*); Osa cantón, Península de Osa, Cerro Helado, 250–300 m, *Dauphin 551* (**Gradstein et al. 1994** as *Cyrtolejeunea holostipa*; **Dauphin 2005**); S. loc. (**Merwin et al. 2001** as *Cyrtolejeunea holostipa*). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Cyrtolejeunea holostipa*); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 24 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1088*, *SV/ H-0002/b*, *SV/ H-0061* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Cyrtolejeunea holostipa*); Dota cantón, San Gerardo, Río Savegre, *Schäfer-Verwimp & Holz SV/H-0002b* (**Dauphin 2005**); Dota cantón, San Gerardo, Río Savegre, *Schäfer-Verwimp & Holz SV/H-0061* (Hb. Schäfer-Verwimp, **Dauphin 2005**; **Ye et al. 2015**).

PANAMA. S. loc. (**Campos et al. 2022**); S. loc., *Schäfer-Verwimp & Verwimp 34526/A* (M, **Schäfer-Verwimp et al. 2014**; **Ye and Wei 2021**); S. loc., *Schäfer-Verwimp & Verwimp 34526* (M, **Heinrichs et al. 2014b** as *Cyrtolejeunea holostipa*; **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a**, **2016c**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Ye and Zhu 2018**; **Zhu and Shu 2018**; **Shu et al. 2022**). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4641*, det. Dauphin Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 1,980 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30866* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, entrance to Escuela Los Planes (along road from Chiriquí to Chiriquí Grande), 8°37.8′N, 82°12.8′W, 980 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34526* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,400 m, *Schäfer-Verwimp & Verwimp 34353/B*, *34366/B* (JE, **Schäfer-Verwimp 2014**); Cordillera Talamanca, road from El Volcán, 8°49.67′N, 82°42.85′W, 3 Apr 2013, *Schäfer-Verwimp & Verwimp 34702* (ALCB, **Bastos 2017**); Tierras Altas distrito, El Volcán, 8°46.9′N, 82°38.8′W, 1,410 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34661* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Paraso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34674* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34123/B*, *34164/A*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850–1,000 m, *Salazar Allen et al. 9447* (PMA, **Stotler et al. 1998** as *Cyrtolejeunea holostipa*). ?PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: This probably refers to Panama West. VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30846* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea inflexa (Hampe) Grolle, *J. Hattori Bot. Lab.* 45: 174, 1979 (Grolle 1979a).

≡*Lejeunea inflexa* Hampe, *Nov. Stirp. Pug.* 7: 22, 1838 (Lehmann 1838). Type: "Indiae occidentalis."

≡*Trachylejeunea inflexa* (Hampe) Steph., *Sp. Hepat. (Stephani)* 5: 303, 1913 (Stephani 1913).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Ye and Zhu 2009); S. loc., *Friedrichstahl 18016* (**Grolle 1979a**). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 234* (USCG, Pérez 2009). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 92*, *156* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Cole 1982, 1983, both as *Trachylejeunea inflexa*; Fulford 1987; Fulford and Sharp 1990; Graham et al. 2016). HEREDIA: San Isidro cantón, Cerro de

Las Lajas, 2,000–2,400 m, *Standley 51573a* (JE, **Herzog 1951** as *Trachylejeunea inflexa*; **Grolle 1979a**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50509* (**Herzog 1951** as *Trachylejeunea inflexa*; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, forest near Motas, 4 Apr 1969, *James, W. 1969-100* (R, **Reed and Robinson 1971** as *Trachylejeunea inflexa*; **Dauphin 2005**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, NE of camping site, 1,000–1,200 m, *Salazar Allen 700 p.p.* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 985 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30792* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea intertexta (Lindenb.) Steph., *Bull. Herb. Boissier* 5(2): 79, 1897 (Stephani 1897b).

≡*Lejeunea intertexta* Lindenb., *Syn. Hepat.* 3: 379, 1845 (Gottsche et al. 1845a). Type: Caroline Islands.

=*Cheilolejeunea inflata* Steph., *Sp. Hepat. (Stephani)* 5: 645, 1914 (Stephani 1914), syn. fide Grolle (1979b). Type: Cameroon.

PANAMA. PANAMA: Panamá distrito, Avenida Franji-Pani, near Smithsonian Tropical Research Institute, 50 m, 22 Apr 1991, *Gradstein 7886* (MO, EGR, **Bastos 2017**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand(?), Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea jackii (Prantl) W.Ye, R.L.Zhu et Gradst., *Cryptogamie, Bryologie* 36(4): 325, 2015 (Ye et al. 2015).

≡*Lejeunea jackii* Prantl, *Hedwigia* 31: xvii, 1892 (Prantl 1892). Type: Peru.

≡*Peltolejeunea jackii* (Prantl) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

NICARAGUA. S. loc. (Stephani 1911b as *Peltolejeunea jackii*; Bastos and Gradstein 2020b; Gradstein 2021); S. loc., *Baker* (G, **Bischler 1965** as *Peltolejeunea jackii*). *GRANADA: Granada municipio, Volcán Mombacho, 750–1,150 m, 31 Aug 1983, *Miller et al. 1428*, det. Dauphin May 2017 (MO-5238380! http://tropicos.org/specimen/90108659, **this publication**).

Also reported from Western South America.

Cheilolejeunea laevicalyx (J.B.Jack et Steph.) Grolle, *J. Hattori Bot. Lab.* 65: 403, 1988 (Grolle 1988).

≡*Strepsilejeunea laevicalyx* J.B.Jack et Steph., *Sp. Hepat. (Stephani)* 5: 283, 1913 (Stephani 1913). Type: Colombia.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein and Bastos 2021). SAN JOSÉ: Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Mexico, Northern South America, Western South America.

****Cheilolejeunea larsenii*** Mizut., *Dansk Bot. Ark.* 27(1): 95, 1969 (Hattori and Mizutani 1969). Type: Thailand.

=*Cheilolejeunea adnata* var. *autoica* Gradst. et Ilk.-Borg., *Mem. New York Bot. Gard.* 76(4): 64, 2009 (Gradstein and Ilkiu-Borges 2009), syn. fide Shu et al. (2015). Type: French Guiana.

***COCOS I.** Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, 20–26 Jan 1994, *Dauphin 1069*, det. G. Dauphin Nov 2020 (CR-4468335!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, 20–26 Jan 1994, *Dauphin 924*, det. G. Dauphin Nov 2020 (CR-4468334!, **this publication**).

Also reported from West Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Indian Subcontinent, Indo-China, Malesia, Northern South America, Brazil.

Cheilolejeunea lineata (Lehm. et Lindenb.) Schiffn., *Hepat. (Engl.-Prantl)*: 124, 1893 (Schiffner 1893a).

≡*Jungermannia lineata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 53, 1832 (Lehmann 1832). Type: Réunion (but type locality is rejected as mislabeled).

≡*Cystolejeunea lineata* (Lehm. et Lindenb.) A.Evans, *Bull. Torrey Bot. Club* 33(1): 17, 1906 (Evans 1906b).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 21* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Cystolejeunea lineata*).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 2,100–2,370 m, 12 May 1992, *Allen 11997B p.p.*, det. Dauphin May 2017 (MO-6699927! http://tropicos.org/specimen/100986367, **this publication**).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Cystolejeunea lineata*). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Nonkulolu 36* (UC, **Norris et al. 2017** as *Cystolejeunea lineata*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,500 m, 7 Mar 1992, *Lyon 180*, det. Dauphin 2017 (MO-4411438! https://tropicos.org/specimen/90029071, **this publication**); Osa cantón, Los Mogos, Cerro Helado, 250–300 m,

31 Aug 1993, *Gradstein & Dauphin 9355* (U, USJ, SP, MO-4428379!, **Gradstein et al. 1994** as *Cystolejeunea lineata*; **Dauphin 2005** as *Cystolejeunea lineata*; **Bastos 2017**); Osa cantón, trail Boscosa-Cerro Chocuaco, 350 m, *Gradstein & Dauphin 9323* (U, USJ, **Gradstein et al. 1994** as *Cystolejeunea lineata*; **Dauphin 2005** as *Cystolejeunea lineata*).

PANAMA. S. loc. (Gradstein et al. 2001b as *Cystolejeunea lineata*). BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño & Salazar Allen 3403*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 945 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30785* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, 8°37′N, 80°07′W, 1 Apr 2010, *Schäfer-Verwimp & Verwimp 30785* (M, **Heinrichs et al. 2014b** as *Cystolejeunea lineata*; **Schäfer-Verwimp et al. 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34232* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Cystolejeunea lineata*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Cystolejeunea lineata*); S. loc. (Schäfer-Verwimp 2014). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road. 9°13.4–5′N, 79°22.7–9′W, 900–1,000 m, *Salazar Allen et al. 4031* (PMA, **Stotler et al. 1998** as *Cystolejeunea lineata*); Panamá distrito, Cerro Jefe, along unpaved road. 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30728* (JE, **Schäfer-Verwimp 2014**); Panamá distrito, Cerro Jefe, NE of the INTEL tower, 900–1,000 m, *Salazar Allen et al. 4027*, *4030*, *Valdespino & Aranda 160a* (PMA, **Stotler et al. 1998** as *Cystolejeunea lineata*).

COCOS I. Cerro Pelón, 5°32′57″N, 87°03′56″W, 400 m, 9 Feb 1994, *Dauphin 1146 p.p.*, det. G. Dauphin Nov 2020 (CR!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, *Lücking 92-284* (**Dauphin 1995, 2005**, both as *Cystolejeunea lineata*); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 550 m, *Lücking 92-303* (USJ, **Gradstein et al. 1994** as *Cystolejeunea lineata*; **Dauphin 2005** as *Cystolejeunea lineata*); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 972*, det. G. Dauphin Mar 2021 (USJ-47642!, CR-4468341!, W-0207409! https://w.jacq.org/W0207409, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 979*, det. G. Dauphin Apr 2021 (USJ-47195!, CR-4468405!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 972* (USJ, **Dauphin 1995, 1999, 2005**, all as *Cystolejeunea lineata*); last part of trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 500–634 m, 31 Mar 1988, *Lücking 92-303*, det. G. Dauphin Mar 2021 (USJ-47370!, **this publication**); Yglesias E, 500–634 m, Apr 1992, *Lücking 283* (USJ, **Bernecker-Lücking 2000** as *Cystolejeunea lineata*); Yglesias E, 500–634 m, Apr 1992, *Lücking 363* (hb. Bernecker, **Bernecker-Lücking 2000** as *Cystolejeunea lineata*); Yglesias E, 500–634 m, Apr 1992, *Lücking 708* (hb. Bernecker, **Bernecker-Lücking 2000** as *Cystolejeunea lineata*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea lobulata (Lindenb.) Gradst. et C.J.Bastos, *Nova Hedwigia* 111(3/4): 315, 2020 (Bastos and Gradstein 2020b).

≡*Lejeunea lobulata* Lindenb., *Syn. Hepat.* 3: 363, 1845 (Gottsche et al. 1845a). Type: St. Kitts.

=*Lejeunea oncophylla* Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 33(7): 86, 1876 (Ångström 1876), syn. fide Bastos and Gradstein (2020b). Type: Brazil.

≡*Cheilolejeunea oncophylla* (Ångstr.) Grolle et M.E.Reiner, *J. Bryol.* 19(4): 781, 1997 (Grolle and Reiner-Drehwald 1997).

GUATEMALA. QUICHÉ: S. loc., *Pérez 2365* (USCG, Pérez 2009 as *Cheilolejeunea oncophylla*).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014 as *Cheilolejeunea oncophylla*; Lavocat Bernard 2018 as *Cheilolejeunea oncophylla*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Sector Pitilla, 700–1,200 m, *Dauphin et al. 1868* (CR, **Dauphin 2005** as *Cheilolejeunea oncophylla*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,350–3,400 m, *Schäfer-Verwimp & Holz SV/H-0154/B p.p.* (M, **Gradstein and Bastos 2021**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Schäfer-Verwimp & Holz SV/H-0161/A* (M, **Gradstein and Bastos 2021**); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro Buenavista (Cerro de La Muerte), 3,350 m, 26 Dec 1992, *Schäfer-Verwimp & Holz SV/H-0160* (hb. Schäfer-Verwimp, ALCB, **Bastos 2017** as *Cheilolejeunea oncophylla*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Cheilolejeunea oncophylla*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,510 m, *Schäfer-Verwimp & Verwimp 34391* (JE, **Schäfer-Verwimp 2014** as *Cheilolejeunea oncophylla*); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020** as *Cheilolejeunea oncophylla*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022** as *Cheilolejeunea oncophylla*). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30780* (JE, **Schäfer-Verwimp 2014** as *Cheilolejeunea oncophylla*). *NASO TJËR DI COMARCA: Cerro Fábrega, 9°05′45″N, 82°53′10″W, 12 Feb 1995, *Dauphin 1553A*, det. G. Dauphin 2020 (CR!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea norisiae G.Dauphin et Gradst., *J. Bryol.* 25(4): 259, 2003 (Dauphin and Gradstein 2003). Holotype: Panama prov., Panama, Cerro Azul, Sendero El Cantar, 9°12′57″N, 79°24′32″W, *Dauphin 96-23* (PMA-10120; isotypes, GOET, NY).

PANAMA. S. loc. (Bastos and Gradstein 2006, 2020a, 2020b; Mustelier 2012; Peralta and Reiner-Drehwald 2013; Schäfer-Verwimp 2014); S. loc., *Schäfer-Verwimp & Verwimp 30821* (M, **Heinrichs et al. 2014b**; **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a, 2016c**; **Zhu et al. 2017, 2018b**; **Zhu and Shu 2018**). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño 3371*, det. Dauphin Aug 2017 (PMA, **this publication**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 945 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30781* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Azul, Sendero el Cantar, 9°12′57″N, 79°24′32″W, *Dauphin* (PMA, **Dauphin et al. 2006**); Panamá distrito, Cerro Azul, Sendero el Cantar, 9°12′57″N, 79°24′32″W, 800–900 m, 20 Mar 1996, *Chung 2007* (PMA, **Dauphin and Gradstein 2003**; **Bastos 2017**); Panamá distrito, Cerro Azul, Sendero el Cantar, 9°12′57″N, 79°24′32″W, 800–900 m, 20 Mar 1996, *Dauphin 96-23* (PMA, GOET, NY, **TYPE**; **Dauphin and Gradstein 2003**, **Bastos 2017**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30821* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean.

Cheilolejeunea ovalis (Lindenb. et Gottsche) W.Ye, R.L. Zhu et Gradst., *Cryptog., Bryol.* 36(4): 326, 2015 (Ye et al. 2015).

≡*Lejeunea ovalis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 754, 1847 (Gottsche et al. 1847). Type: Venezuela.

≡*Peltolejeunea ovalis* (Lindenb. et Gottsche) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

≡*Omphalanthus ovalis* (Lindenb. et Gottsche) Gradst., *Proc. Kon. Ned. Akad. Wetensch.* C 80: 411, 1977 (Gradstein et al. 1977).

≡*Odontolejeunea ovalis* (Lindenb. et Gottsche) Gradst., *Caldasia* 23(1): 209, 2001 (Gradstein et al. 2001a), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

?GUATEMALA. S. loc. (Stephani 1911b as *Peltolejeunea ovalis*; Schäfer-Verwimp 2014 as *Omphalanthus ovalis*; Ellis et al. 2016b; Schäfer-Verwimp and Van Melick 2016). Note: We are not aware of any firsthand report from Guatemala.

***HONDURAS.** *FRANCISCO MORAZÁN: Distrito Central municipio, La Tigre National Park, Sendero de la Cascada on the Jutiapa side, Montana de San Juancito, 14°12′N, 87°06′W, 1,800–2,050 m, 7 May 1991, *Davidse 3425A*, det. Dauphin May 2017 (MO-5141514! http://tropicos.org/specimen/90080428, **this publication**).

***NICARAGUA.** *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14–15′00″N, 85°38′00″W, 930 m, 20–21 Jan 1982, *Stevens et al. 21413*, det. Dauphin May 2017 (MO-6236076! http://tropicos.org/specimen/100366237, **this publication**); La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14–15′00″N, 85°38′00″W, 930 m, 20–21 Jan 1982, *Stevens et al. 21413A*, det. Dauphin May 2017 (MO-6236075! http://tropicos.org/specimen/100366238, **this publication**); La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14–15′00″N, 85°38′00″W, 930 m, 20–21 Jan 1982, *Stevens et al. 21417*, det. Dauphin May 2017 (MO-6236087! http://tropicos.org/specimen/100366212, **this publication**).

COSTA RICA. Cordillera de Talamanca, *Kappelle 3434* (U, **Kappelle 1996** as *Omphalanthus ovalis*); S. loc. (Gradstein et al. 1977 as *Omphalanthus ovalis*; Schäfer-Verwimp 2014 as *Omphalanthus ovalis*; Ellis et al. 2016b; Schäfer-Verwimp and Van Melick 2016). ALAJUELA: Alajuela cantón, Fraijanes, 1,500–1,700 m, *Standley 47501* (**Herzog 1951** as *Peltolejeunea ovalis*; **Morales 1991** as *Omphalanthus ovalis*; **Dauphin 2005** as *Omphalanthus ovalis*). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope, near Finca, 2,000–2,400 m, *Standley 34964* (**Herzog 1951** as *Peltolejeunea ovalis*; **Morales 1991** as *Omphalanthus ovalis*; **Dauphin 2005** as *Omphalanthus ovalis*). PUNTARENAS: Coto Brus cantón, Fila Cruces, Laguna Gamboa, 8°57′00′N, 83°04′20′W, *Dauphin 1736* (CR, **Dauphin 2005** as *Omphalanthus ovalis*); Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Picado 245* (CR, **Dauphin 2005** as *Omphalanthus ovalis*); Monteverde, <1,500 m (Dauphin 2005 as *Omphalanthus ovalis*; Morales 1991 as *Omphalanthus ovalis*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Odontolejeunea ovalis*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Omphalanthus ovalis*); Monteverde, 15 Jan 1965, *James, W. 40d* (R, **Dauphin 2005** as *Omphalanthus ovalis*; **Reed and Robinson 1971** as *Peltolejeunea ovalis*); S. loc. (**Merwin et al. 2001** as *Omphalanthus ovalis*). SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38420* (**Herzog 1951** as *Peltolejeunea ovalis*; **Morales 1991** as *Omphalanthus ovalis*; **Dauphin 2005** as *Omphalanthus ovalis*).

PANAMA. S. loc. (**Verdoorn 1932** as *Peltolejeunea ovalis*; Ellis et al. 2016b). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30945/A* (JE, **Schäfer-Verwimp 2014** as *Omphalanthus ovalis*). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34729* (JE, **Schäfer-Verwimp 2014** as *Omphalanthus ovalis*). LOS SANTOS: Las Tablas distrito, Cerro Canajagua, ~950 m, *Troll 157* (F, PMA, **Stotler et al. 1998** as *Omphalanthus ovalis*); S. loc. (Schäfer-Verwimp 2014 as *Omphalanthus ovalis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea piriflora Schiffn., *Bot. Jahrb. Syst.* 23(5): 592, 1897 (Schiffner 1897).

≡*Lejeunea piriflora* Gottsche ex Pol., *J. Bot.* 15: 227, 1877 (Polakowsky 1877), nom. inval. (ICN2018 Art. 38.1(a); no description). Type: Costa Rica, Alajuela, Jun 1875, *Polakowsky 120* (not localized).

COSTA RICA. S. loc. (Bonner 1963b; Reiner-Drehwald 1999); S. loc., *Polakowsky* (**Schiffner 1897**). ALAJUELA: S. loc., *Polakowsky* (**Polakowsky 1879** as *Lejeunea piriflora*); S. loc., Jun 1875, *Polakowsky 120* (**TYPE** of *Lejeunea piriflora*, **Polakowsky 1877** as *Lejeunea piriflora*; **Geissler and Bischler 1987** as *Lejeunea piriflora*).

Not found outside Central America.

Cheilolejeunea quinquecarinata (R.M.Schust.) W.Ye, R.L.Zhu et Gradst., *Cryptog., Bryol.* 36(4): 326, 2015 (Ye et al. 2015).

≡*Aureolejeunea quinquecarinata* R.M.Schust., *Phytologia* 39(6): 429, 1978 (Schuster 1978b). Type: Venezuela.

COSTA RICA. S. loc., *Schäfer-Verwimp & Holz SV/H-0457/a* (JE, **Ye et al. 2015** as *Aureolejeunea quinquecarinata*).

Also reported from the Caribbean, Northern South America, Western South America.

Cheilolejeunea revoluta (Herzog) Gradst. et Grolle, *J. Hattori Bot. Lab.* 74: 59, 1993 (Gradstein et al. 1993).

≡*Pycnolejeunea revoluta* Herzog, *Feddes Repert. Spec. Nov. Regni Veg.* 57(1/2): 193, 1955 (Herzog 1955a). Type: Colombia.

COSTA RICA. S. loc. (Gradstein and Costa 2003; Yano and Peralta 2009; **Campos 2016**; Bastos 2017; Bastos and Gradstein 2020a, 2020b; Gradstein 2021); S. loc., *Dauphin 1990* (GOET, **Wilson et al. 2007**; **Heinrichs et al. 2012c, 2014a, 2014b**; **Czumay et al. 2013**; **Dong et al. 2013**; **Ye et al. 2013**; **Schäfer-Verwimp et al. 2014**; **Ye and Zhu 2018**; **Shu and Zhu 2019**). PUNTARENAS: Coto Brus cantón, Fila Tigra, Palmira de Gutiérrez Braun, 8°56′40″N, 82°05′30″W, 1,100–1,200 m, *Dauphin & Chacón 1990* (CR, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=22350&Z_CHK=64326, **Dauphin et al. 1998**; **Dauphin 2005**).

Also reported from the Caribbean(?), Northern South America, Western South America, Brazil.

Cheilolejeunea rigidula (Nees ex Mont.) R.M.Schust., *Castanea* 36(2): 102, 1971 (Schuster 1971a).

≡*Lejeunea rigidula* Nees ex Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 336, 1840 (Montagne 1840). Type: French Guiana.

≡*Euosmolejeunea rigidula* (Nees ex Mont.) Steph., *Sp. Hepat. (Stephani)* 5: 682, 1915 (Stephani 1915).

=*Lejeunea duriuscula* Nees, *Syn. Hepat.* 3: 364, 1845 (Gottsche et al. 1845a), syn. fide Schuster (1980d). Type: Suriname.

≡*Euosmolejeunea duriuscula* (Nees) Steph., *Hedwigia* 29(2): 80, 135, 1890 (Stephani 1890c).

=*Cheilolejeunea polyantha* A.Evans, *Mem. Torrey Bot. Club* 8(2): 141, 1902 (Evans 1902b). Type: USA.

GUATEMALA. S. loc. (Fulford 1987; Reiner-Drehwald 1995b). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 14*, *45*, *47*, *140* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**).

BELIZE. S. loc. (Schuster 1980d; Fulford 1987 as *Euosmolejeunea rigidula*; Fulford and Sharp 1990 as *Euosmolejeunea rigidula*; Lücking 1995; Whittemore and Allen 1996; Ilkiu-Borges 2000; Bastos 2004; **Campos 2016**). *BELIZE: Crooked Tree village, 17°47′N, 88°32′W, 60 m, 22 Mar 1987, *Davidse & Brant 33147*, det. Dauphin Jun 2017 (MO-5227860! https://tropicos.org/specimen/90100665, **this publication**). *TOLEDO: Bladen Nature Reserve, Richardson Creek, 16°33′N, 88°48′W, 2–3 Mar 1987, *Davidse 31929 p.p.*, det. Dauphin May 2017 (MO-6699907!, **this publication**); Punta Gorda, Oct 1932, *White 17*, det. Dauphin Jun 2017 (MO-5375190!, **this publication**); Punta Gorda, Feb 1963, *White 91*, det. Dauphin Jun 2017 (MO-5247604!, **this publication**); Punta Gorda, Feb 1933, det. Dauphin Jun 2017 (MO-5223868! https://tropicos.org/specimen/90093864, **this publication**).

***HONDURAS.** S. loc. (Fulford 1987 as *Euosmolejeunea rigidula*; Fulford and Sharp 1990; Lücking 1995; Ilkiu-Borges 2000; Bastos 2004). *COMAYAGUA: Rio Selguapa, ~4 km SE of Siguatepeque, 14°34′N, 87°48′W, 8 May 1992, *Allen 11806*, det. Whittemore 1992 (MO-3965013! http://tropicos.org/specimen/101212842, **this publication**). *CORTÉS: San Francisco de Yojoa municipio, Pena Blanca, 19 Feb 1983, *Tag 1983-7*, det. Dauphin Jun 2017 (MO-5378717!, **this publication**). *OLANCHO: Catacamas municipio, Sierra de Algalta, Montana Babilonia, trail from La Chorrera to lower gate, 12 km E of Gualaco, 15°10′N, 85°58′W, 4 Jun 1992, *Allen 12810B*, det. Dauphin Jun 2017 (MO-3964984! http://tropicos.org/specimen/101213059, **this publication**). Note: Here confirmed for Honduras.

***EL SALVADOR.** *AHUACHAPÁN: San Ramón, 9 Dec 2008, *Búcaro H120*, det. Dauphin (MHES!, **this publication**). *SANTA ANA: Metapán municipio, Montecristo, calle a Los Planes, *Búcaro H328*, det. Dauphin (MHES!, **this publication**).

***NICARAGUA.** *ATLÁNTICO NORTE: Waspán municipio, ~13 km above Kururia, 14°42′N, 84°11′W, 2 Mar 1979, *Pipoly 3762 p.p.*, det. Dauphin May 2017 (MO-6699912! http://tropicos.org/specimen/100988658, **this publication**). *ESTELÍ: Estelí municipio, Estelí-Laguna Miraflor road, 7 km W of Laguna entrance, 7 May 2010, *Magill 14009 p.p.*, det. Dauphin May 2017 (MO-6699943! http://tropicos.org/specimen/100988181, **this publication**). *MANAGUA: Managua municipio, ~5.4 km NE of El Crucero, ridge of Sierra de Managua near Hacienda Palmira, 12°01′N, 86°16′W, 25 Aug 1977, *Stevens 3527*, det. Whittemore May 1989 (MO-2846409! http://tropicos.org/specimen/100200743, **this publication**).

COSTA RICA. Cordillera de Talamanca, *Van Dunné 126* (AMD, **Kappelle 1996**); S. loc. (Ilkiu-Borges 2000; Bastos 2004). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3319* (CR, **Dauphin and Grayum 2005**); Tilarán cantón, NE of Tilarán, 20 Feb 1930, *Dodge & Thomas 6580*, det. Dauphin Jun 1970 (MO-5243767!, **this publication**). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 50014 p.p.* (**Herzog 1951** as *Euosmolejeunea rigidula*; **Morales 1991**); San Isidro cantón, Yerba Buena, *Standley 50049 p.p.* (**Herzog 1951** as *Euosmolejeunea rigidula*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 49061*, *50010 p.p.* (**Herzog 1951** as *Euosmolejeunea rigidula*, **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-151*, *92-187*, *92-188*, *92-379*, *92-486*, *92-546*, *92-778* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-558* (hb. Lücking, **Lücking 1995**; **Bastos 2012**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 460–480 m, 1 Jun 1992, *Lücking 92-558* (EGR, **Bastos 2017** also as *Cheilolejeunea polyantha*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005; Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James, W. 105* (**Dauphin 2005**); Monteverde, 16 Mar 1969, *James, W. 1969-102*, det. Dauphin Jun 2017 (MO-4426389!, **this publication**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (**Gradstein 1993**; Lücking 1995; Stotler et al. 1998; Ilkiu-Borges 2000; Bastos 2004). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4609* (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4611* (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Tranquilo Bay Eco Adventure Lodge (9°15′23.1″N, 82°08′41.4″W) in Isla Bastimento (**Salazar Allen et al. 2022**). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34112*, *34153/B*, *34175/C* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/F* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General División Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 661*, *672*, *674*, *738*, *740*, *741*, *747.2*, *803*, *819 p.p.*, *821*, *822*, *824 p.p.*, *837* (PMA, **Sierra et al. 2019a**). *COLÓN: Colón distrito, Quebrada Bonita, 70–80 m, 27 Dec 1934, *Steyermark 17161*, det. Dauphin Jun 2017 (MO-5243733! https://tropicos.org/specimen/90119102, **this publication**); Colón distrito, trail to triangulation station on top of Tumba Vieja, 90–200 m, 12 Dec 1934, *Dodge 16951*, det. Dauphin Jun 1970 (MO-5243728! https://tropicos.org/specimen/90119097, **this publication**); Portobelo, 28 Nov 1977, *Balázs B/77/11/B*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, trail to Pirre 2, 50 m, *Salazar Allen & Gradstein 9200* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15072*, *15093a*, *15115* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Shattuck 4CH* (F, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 2003, *Dauphin 3157* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller, 9°09′N, 79°51′W, *Salazar Allen & Chung 4538* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Fairchild 1 and 17–18, *Salazar Allen et al. 6035*, *6079* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino J. van Tyne-Big Trees, *Salazar Allen & Chung 4627b* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Lutz, *Shattuck 568 p.p.* (F, PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Gross 10, 2003, *Dauphin 3171* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Gatún, 1 Jan 1910, *Howe 15330*, det. Dauphin Jun 2017 (MO-5226626!, **this publication**). PANAMA: Panamá City, 18 Apr 1972, *Richards 2043* (EGR, **Bastos 2017** as *Cheilolejeunea duriuscula*); Panamá distrito, Avenida Franji-Pani, near Smithsonian Tropical Research Institute, 50 m, 22 Apr 1991, *Gradstein 7886* (MO, EGR, **Stotler et al. 1998**); Road between Arraijan and La Chorrera, 18 Apr 1974, *Richards 2043* (EGR, **Bastos 2012**). VERAGUAS: Isla Canales de Tierra, Sendero de los tanques de reserva de agua, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19761* (PMA, **Salazar Allen and Chung 2003, 2006**); Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34274* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Boca Río Yglesias, 5°32′57″N, 87°03′56″W, 0 m, *Dauphin 1143*, det. G. Dauphin Apr 2021 (CR-4468159!, **this publication**); NE de la Isla, 200 m, 14 Feb 1994, *Dauphin* (USJ, **Dauphin 1995**); Río Genio, 5°32′57″N, 87°03′36″W, 10 m, 26 Jan 1994, *Dauphin 1057*, det. G. Dauphin Mar 2021 (USJ-47227!, CR-4468336!, W-0207412! https://w.jacq.org/W0207412, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 510* (USJ, Bernecker-Lücking 2000 as *Cheilolejeunea* cf. *rigidula*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 545* (hb. Bernecker, Bernecker-Lücking 2000 as *Cheilolejeunea* cf. *rigidula*); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 14 Feb 1994, *Dauphin 1057* (USJ, **Dauphin 1995, 1999**); S. loc. (Dauphin 1995, 2005; Salazar Allen and Chung 2003); Yglesias B, 150–250 m, Apr 1992, *Lücking 571* (hb. Bernecker, Bernecker-Lücking 2000 as *Cheilolejeunea* cf. *rigidula*).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southwestern Pacific(?), Northwestern Pacific(?), Northeastern USA(?), South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea schaefer-verwimpii Gradst. et C.J.Bastos., *Nova Hedwigia* 113(1/2): 82, 2021 (Gradstein and Bastos 2021). Holotype: Costa Rica, Cartago: Cordillera de Talamanca, Panamericano km 67, Reserva 3 de Junio, "in Quellmoor epiphytisch an Sträuchern," 2,460 m, 3 Jan 2000, *A. Schäfer-Verwimp & I. Holz 0452/B* as *C. choachina* (JE, isotypes GOET, CR).

COSTA RICA. CARTAGO: El Guarco cantón, 3 de Junio, 2,460 m, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0452/B* (JE, GOET, CR, **TYPE, Gradstein and Bastos 2021**).

Not found outside Central America.

Cheilolejeunea tonduzana (Steph.) W.Ye, R.L.Zhu et Gradst., *Cryptog., Bryol.* 36(4): 326, 2015 (Ye et al. 2015).

≡*Archilejeunea tonduzana* Steph., *Sp. Hepat. (Stephani)* 4: 721, 1911 (Stephani 1911b). Lectotype (Bonner 1962a): Costa Rica, Cartago, Turrialba, Forêts du Río Naranjo, 200–250 m, 1893, *Tonduz*, hb. Vetter 3016 (G-00046867 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119795&lang=en).

≡*Aureolejeunea tonduzana* (Steph.) Gradst., *Phytotaxa* 76(3): 46, 2013 (Gradstein 2013a).

=*Aureolejeunea fulva* R.M.Schust., *Phytologia* 39(4): 429, 1978 (Schuster 1978b), syn. fide Gradstein (2013a). Type: Venezuela.

≡*Cheilolejeunea fulva* (R.M.Schust.) W.Ye et R.L.Zhu ex M.Wigginton, *J. Bryol.* 34(4): 275 (Wigginton 2012).

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Aureolejeunea fulva*); Tucurú, *Pérez 111* (USCG, Pérez 2006, **2009**, both as *Aureolejeunea fulva*). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aureolejeunea fulva*). HUEHUETENANGO: S. loc., *Pérez 1424* (USCG, Pérez 2009 as *Aureolejeunea fulva*). QUICHÉ: S. loc. *Pérez 2353* (USCG, Pérez 2009 as *Aureolejeunea fulva*).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, calle Los Planes, 12 Nov 2014, *Búcaro H326*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Aureolejeunea fulva*; Holz 2006 as *Aureolejeunea fulva*); S. loc. (**Stephani 1911b** as *Archilejeunea tonduzana*; Nöske et al. 2003 as *Aureolejeunea fulva*; Gradstein and Holz 2005 as *Aureolejeunea fulva*; Mandl 2007 as *Aureolejeunea fulva*; Ellis et al. 2013 as *Aureolejeunea tonduzana*; Lavocat Bernard 2018); S. loc., 25 Nov 1994, *Gradstein & Mues 9695* (GOET, **Wigginton 2012** as *Cheilolejeunea fulva*). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 9390* (U, USJ, **Gradstein et al. 1994** as *Aureolejeunea fulva*; **Kappelle 1996** as *Aureolejeunea fulva*; **Dauphin 2005** as *Aureolejeunea fulva*); Jiménez cantón, Rio Naranjo, 200–250 m, 1893, *Tonduz*, hb. Vetter 3016 (G-00046867 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119795&lang=en, **TYPE, Bastos 2017**); Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz* (hb. Levier 15653 in G, **Bonner 1962a** as *Archilejeunea tonduzana*). SAN JOSÉ: Cordillera de Talamanca, *Holz CR 00-823* (**Groth-Malonek et al. 2004** as *Aureolejeunea fulva*); Dota cantón, Cerro Sákira, Pan-American Highway km 87, 9°35′N, 83°46′W, 22 Mar 2003, *Holz CR 00-696*, det. Holz (GOET, MO-5282862, **Czumay et al. 2013** as *Aureolejeunea fulva*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Aureolejeunea fulva*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Aureolejeunea fulva*).

?PANAMA. ?CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (Guerra-Batista et al. 2020 as *Cheilolejeunea* cf. *tonduzana*). Note: We are not aware of any positively identified specimen from Panama.

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cheilolejeunea trifaria var. ***clausa*** (Nees et Mont.) C.J.Bastos et Gradst., *Nova Hedwigia* 111(3/4): 327, 2020 (Bastos and Gradstein 2020b).

≡*Lejeunea clausa* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 337, 1840 (Montagne 1840). Type: French Guiana.

≡*Euosmolejeunea clausa* (Nees et Mont.) A.Evans, *Bryologist* 11(4): 69, 1908 (Evans 1908b).

≡*Cheilolejeunea clausa* (Nees et Mont.) R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 863, 1980 (Schuster 1980d).

=*Lejeunea opaca* Gottsche, *Syn. Hepat.* 3: 362, 1845 (Gottsche et al. 1845a), syn. fide Evans (1908b). Type: Suriname.

≡*Euosmolejeunea opaca* (Gottsche) Steph., *Hedwigia* 29(2): 79, 1890 (Stephani 1890c).

GUATEMALA. S. loc., *Norris* (**Robinson 2019** as *Cheilolejeunea clausa*). *EL PETÉN: Flores municipio, SW side of Laguna

Yaxhá, Reserva Privada Yaxhá, 17°03.295′N, 89°23.236′W, 25 Jan 2006, *Quedensley 4226*, det. Dauphin Sep 2017 (MO, W-008958!, **this publication**). IZABAL: El Junquillo, 259 m, 1 Jun 1893, *Wurr* (HBG, JE, **Bastos 2017** as *Cheilolejeunea clausa*).

BELIZE. *BELIZE: Tropical Education Center Mile 28–29 on Western Highway, 17°21′N, 88°32′W, 10 m, 5 Dec 1996, *Allen 17992*, det. Dauphin Jun 2017 (MO-5228041! https://tropicos.org/specimen/90102217, **this publication**). *CAYO: Caracol Ruins, ~14 km W of Las Cuevas Field Station, 16°45′35″N, 89°06′07″W, 520 m, 9 Dec 1996, *Allen 18181*, det. Dauphin Jun 2017 (MO-4417035! https://tropicos.org/specimen/90046795, **this publication**); Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 8 Dec 1996, *Allen 18121*, det. Dauphin Jun 2017 (MO-4417036! https://tropicos.org/specimen/90046794, **this publication**); Mountain Pine Ridge Area along Mahogany Creek, ~5 km S of Augustine, 16°55′N, 89°00′W, 480 m, 9 Dec 1996, *Allen 18235*, det. Dauphin Jun 2017 (MO-4417034! https://tropicos.org/specimen/90046796, **this publication**); Mountain Pine Ridge, Blancaneaux Lodge, 17 mi (27 km) S of Georgeville, 600 m, 24 Jan 1974, *Liesner & Dwyer 1617*, det. Dauphin Jun 2017 (MO-2173605! https://tropicos.org/specimen/2075506, **this publication**); Raspaculo Branch below the confluence with the Monkey Tail Branch, 16°49′N, 88°56′W, 370 m, 14 Dec 1996, *Allen 18439*, det. Dauphin Jun 2017 (MO-4417033! https://tropicos.org/specimen/90046797, **this publication**). TOLEDO: Edwards Road beyond Columbia, Sulphur Hill, 7 Dec 1950, *Gentle 7193* (EGR, **Bastos 2017** as *Cheilolejeunea clausa*).

COSTA RICA. S. loc. (Cole 1982 as *Euosmolejeunea clausa*, 1983 as *Euosmolejeunea clausa*). *LIMÓN: Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11249*, det. Dauphin Jun 2017 (MO-6690018! https://tropicos.org/specimen/100860881, **this publication**). PUNTARENAS: Buenos Aires cantón, Boruca (**Tonduz 1895a** as *Euosmolejeunea opaca*); Buenos Aires cantón, Boruca, *Pittier 6065*, *6071* (**Stephani 1893c** as *Euosmolejeunea opaca*; **Morales 1991** as *Cheilolejeunea clausa*; **Dauphin 2005** as *Cheilolejeunea clausa*); Monteverde (Morales 1991 as *Cheilolejeunea clausa*); Monteverde, 15 Jan 1965, *James, W. 41d*, *1969-102* (R, **Reed and Robinson 1971** as *Euosmolejeunea clausa*; **Dauphin 2005** as *Cheilolejeunea clausa*).

PANAMA. BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Caswell-Levy 1042*, *1043* (PMA, **this publication**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014 as *Cheilolejeunea clausa*); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Euosmolejeunea clausa*; **Stotler et al. 1998** as *Cheilolejeunea clausa*). COCLÉ: Antón distrito, El Valle de Antón, roadside in crater of extinct volcano, 8°36.3′N, 80°07.8′W, 600 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34180/B* (JE, **Schäfer-Verwimp 2014** as *Cheilolejeunea clausa*). *COLÓN: Colón distrito, Tumba Vieja, 70 m, 3 Dec 1934, *Dodge 16762*, det. Dauphin Jun 2017 (MO-5243724! https://tropicos.org/specimen/90119093, **this publication**). *DARIÉN: Pinogana distrito, trail to Cana ~2 km from Cruces de Mono field station, ~20 km SSW of Boca de Cupé, 7°24′N, 77°37′W, 160–200 m, 1 May 1990, *Allen 8782*, det. Dauphin Jun 2017 (MO-3677048! https://tropicos.org/specimen/101210634, **this publication**). *PANAMA WEST: Between junction with Río Pequení and Río Indio, 5 Dec 1934, *Steyermark 16796*, det. Dauphin Jun 2017 (MO-5243725! https://tropicos.org/specimen/90119094, **this publication**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea trifaria (Reinw., Blume et Nees) Mizut., *J. Hattori Bot. Lab.* 27: 132, 1964 (Mizutani 1964) var. ***trifaria***.

≡*Jungermannia trifaria* Reinw., Blume et Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 226, 1825 (Reinwardt et al. 1824a). Type: Java.

≡*Euosmolejeunea trifaria* (Reinw., Blume et Nees) Steph., *Hedwigia* 29(2): 78, 137, 1890 (Stephani 1890c).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 600 m, 2002 (**Andersohn 2004**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 234* (USCG, Pérez 2006). EL PETÉN: S. loc., *Morgan 47* (MO https://tropicos.org/specimen/90205559, Pérez 2009).

BELIZE. S. loc. (**Fulford 1938** as *Euosmolejeunea trifaria*; Whittemore and Allen 1996). CAYO: Mountain Pine Ridge, Blancaneaux Lodge, 17 mi (27 km) S of Georgeville, 600 m, 24 Jan 1974, *Liesner & Dwyer 1617*, det. Dauphin Jun 2017 (MO-2173605! https://tropicos.org/specimen/2075506, **Whittemore and Allen 1996**). *TOLEDO: Columbia River Forest Reserve, Union Camp, 16°23′54″N, 89°08′29″W, 600–700 m, 10 Feb 1997, *Allen 18507*, det. Whittemore 2000 (MO-5215165! https://tropicos.org/specimen/90088074, **this publication**); Punta Gorda, Oct 1932, *White 22*, det. Fulford 1937 (MO-5375139!, **this publication**).

HONDURAS. S. loc. (Miller et al. 1983). COMAYAGUA: Rio Selguapa, ~4 km SE of Siguatepeque, 14°34′N, 87°48′W, 1,600 m, 2 Mar 1993, *Allen 13441*, det. Whittemore 1999 (MO-5211112! https://tropicos.org/specimen/90081980, **this publication**); Siguatepeque, 1,080–1,400 m, *Standley* (**Herzog 1951** as *Euosmolejeunea trifaria*).

***NICARAGUA.** *BOACO: Camoapa municipio, 5 km N of El Zancudo empalme road from Cuapa to Camoapa, 12°20′02″N, 85°23′57″W, 535 m, 10 Dec 2012, *Stevens 33360 p.p.*, det. Dauphin May 2017 (MO-6699940! http://tropicos.org/specimen/100988178, **this publication**).

COSTA RICA. CARTAGO: El Muñeco, Río Reventazón, 1,400–1,500 m, *Standley 51002* (**Herzog 1951** as *Euosmolejeunea trifaria*; **Morales 1991**; **Dauphin 2005**). GUANACASTE: Tilarán, 500–650 m, *Standley 44347* (**Herzog 1951** as *Euosmolejeunea trifaria*; **Morales 1991**; **Dauphin 2005**). *LIMÓN: Pococí

cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11211*, det. Dauphin Jun 2017 (MO-6690022! https://tropicos.org/specimen/100860408, **this publication**); Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11252*, det. Dauphin Jun 2017 (MO-6690021! https://tropicos.org/specimen/100861255, **this publication**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); S. loc. (**Merwin et al. 2001**).

PANAMA. BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Cox 116*, det. Cox Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Punta Donato (9°22′45.5″N, 82°22′07.8″W; **Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**); Tranquilo Bay Eco Adventure Lodge (9°15′23.1″N, 82°08′41.4″W) in Isla Bastimento (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, entrance to Escuela Los Planes (along road from Chiriquí to Chiriquí Grande), 8°37.8′N, 82°12.8′W, 980 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34528* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34483/B* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350 m, *Schäfer-Verwimp & Verwimp 34344* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna, an der Strasse von Chiriquí nach Chiriquí Grande, oberhalb de Finca La Suiza, 8°39′N, 82°12″W, 1,400 m, 29 Mar 2013, *Schäfer-Verwimp 34366/A* (hb. Schäfer-Verwimp, ALCB, **Bastos 2017**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34683*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37,05′N, 82°06,60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34746* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34725* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, *Schäfer-Verwimp & Verwimp 34159/A* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 695*, *697 p.p.*, *698*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Pinogana distrito, Parque Nacional de Darién, Cruce de Mono field station, 20 km SSW of Boca de Cupe, ridge trail from Cana Road, 200 m, 29 Apr 1990, *Allen 8651* (MO https://tropicos.org/specimen/101210275, **Stotler et al. 1998**); Pinogana distrito, trail to Cana ~2 km from Cruces de Mono field station, ~20 km SSW of Boca de Cupé, 7°58′N, 77°40′W, 160–200 m, 1 May 1990, *Allen 8782*, det. Dauphin Jun 2017 (MO-3677048! https://tropicos.org/specimen/101210634, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, *Salazar Allen & Gradstein 9454* (PMA, U, **Stotler et al. 1998**). ?PANAMA: S. loc. (Schäfer-Verwimp 2014, probably including and referring to Panama West).

Also reported from the West Tropical Africa, West-Central Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Southeastern USA, Mexico, Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cheilolejeunea unciloba (Lindenb.) Malombe, *Acta Bot. Hung.* 51(3/4): 325, 2009 (Malombe 2009).

≡*Lejeunea unciloba* Lindenb., *Syn. Hepat.* 3: 331, 1845 (Gottsche et al. 1845a). Type: Brazil.

≡*Leucolejeunea unciloba* (Lindenb.) A.Evans, *Torreya* 7(12): 22, 1907 (Evans 1907a).

BELIZE. CAYO: Mountain Pine Ridge, Cave Rio Frio, 650 m, 1996, *Eggers BEZ 2/35* (hb. Eggers, **Eggers et al. 1998** as *Leucolejeunea unciloba*).

Also reported from East Tropical Africa, Southern Africa, Western Indian Ocean(?), North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Cheilolejeunea valenciae (Steph.) Xiao L.He, *Ann. Bot. Fenn.* 33(1): 55, 1996 (He 1996).

≡*Pycnolejeunea valenciae* Steph., *Sp. Hepat. (Stephani)* 5: 605, 1914 (Stephani 1914). Type: "America Tropica."

?HONDURAS. S. loc. (Dauphin et al. 2008; Bastos 2017; Bastos and Gradstein 2020a). Note: We are not aware of any firsthand report from Honduras.

NICARAGUA. S. loc. (Bastos and Gradstein 2020b); S. loc., *Reap* (G, **He 1996**). GRANADA: Granada municipio, N Granada, Küsten Cordillera, *Reap* (G, **He 1996**).

Also reported from Northern South America.

Cheilolejeunea xanthocarpa (Lehm. et Lindenb.) Malombe, *Acta Bot. Hung.* 51(3/4): 326, 2009 (Malombe 2009).

≡*Jungermannia xanthocarpa* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 8, 1833 (Lehmann 1833). Type: Brazil.

≡*Archilejeunea xanthocarpa* (Lehm. et Lindenb.) Steph., *Hedwigia* 29(3): 134, 1890 (Stephani 1890a).

≡*Leucolejeunea xanthocarpa* (Lehm. et Lindenb.) A.Evans, *Torreya* 7(12): 229, 1907 (Evans 1907a).

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Leucolejeunea xanthocarpa*); S. loc., *Pérez 255* (USCG, Pérez 2009 as *Leucolejeunea xanthocarpa*); Tucurú, *Pérez 255* (USCG, Pérez 2006 as *Leucolejeunea xanthocarpa*).

BELIZE. CAYO: Mountain Pine Ridge, Cave Rio Frio, 650 m, 1996, *Eggers BEZ 2/35* (hb. Eggers, **Eggers et al. 1998** as *Leucolejeunea xanthocarpa*). *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 940 m, 19 Feb 1997, *Allen 18953 p.p.*, det. Dauphin Jun 2017 (MO-6699925! https://tropicos.org/specimen/100988596, **this publication**).

HONDURAS. S. loc. (Fulford and Sharp 1990 as *Leucolejeunea xanthocarpa*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 65209* (**Herzog 1951** as *Leucolejeunea xanthocarpa*). *OCOTEPEQUE: Belén Gualcho municipio, Cordillera de Celaque, 5.5 mi (8.8 km) N of Belén Gualcho, road to Cucuyagua, 14°31′12″N, 88°48′26″W, 1,810 m, 24 Jun 1994, *Davidse et al. 35372A*, det. Dauphin May 2017 (MO-5280923! https://tropicos.org/specimen/90028858, **this publication**).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Leucolejeunea xanthocarpa*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/23/2* (**Winkler 1967** as *Leucolejeunea xanthocarpa*).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Leucolejeunea xanthocarpa*; Holz 2006 as *Leucolejeunea xanthocarpa*); S. loc. (Cole 1982, 1983, both as *Leucolejeunea xanthocarpa*; Fulford and Sharp 1990 as *Leucolejeunea xanthocarpa*; Gradstein and Holz 2005 as *Leucolejeunea xanthocarpa*; Mandl 2007 as *Leucolejeunea xanthocarpa*); S. loc., *Pittier 1769* (BM, **Wigginton 2012**). ALAJUELA: Poás Volcano, *Morales 6026* (**Morales 1991** as *Leucolejeunea xanthocarpa*); Upala cantón, Guanacaste National Park, Sector Santa María, *Dauphin 1874* (CR, **Dauphin 2005** as *Leucolejeunea xanthocarpa*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 2590* (CR, **Dauphin 2005** as *Leucolejeunea xanthocarpa*). HEREDIA: Barva cantón, Laguna Volcán Barva-Carrizal, *Pittier 6026* (**Stephani 1893c** as *Archilejeunea xanthocarpa*; **Dauphin 2005** as *Leucolejeunea xanthocarpa*). PUNTARENAS: Monteverde (Morales 1991 as *Leucolejeunea xanthocarpa*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Leucolejeunea xanthocarpa*); Monteverde, Oct 1963, *James, W. 13* (R, **Reed and Robinson 1971** as *Leucolejeunea xanthocarpa*; **Dauphin 2005** as *Leucolejeunea xanthocarpa*); S. loc. (**Merwin et al. 2001** as *Leucolejeunea xanthocarpa*; Dauphin 2005 as *Leucolejeunea xanthocarpa*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Leucolejeunea xanthocarpa*); Dota cantón, San Gerardo (Dauphin 2005 as *Leucolejeunea xanthocarpa*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Leucolejeunea xanthocarpa*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Leucolejeunea xanthocarpa*).

PANAMA. †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014, must refer to Naso Tjër Di). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30918 p.p.* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34513/B* (JE, **Schäfer-Verwimp 2014**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 319* (PMA, **Dauphin 2007** as *Leucolejeunea xanthocarpa*).

Also reported from Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Northwestern Pacific(?), Northeastern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Clasmatocolea Spruce, *Trans & Proc. Bot. Soc. Edinburgh* 15: 440, 1885 (Spruce 1885).

Clasmatocolea vermicularis (Lehm.) Grolle, *Rev. Bryol. Lichénol.* 29(1/2): 78, 1960 (Grolle 1960a).

≡*Jungermannia vermicularis* Lehm., *Linnaea* 4(3): 361, 1829 (Lehmann 1829). Type: South Africa.

≡*Chiloscyphus vermicularis* (Lehm.) Hässel, *Nova Hedwigia* 63(3/4): 513, 1996 (Hässel 1996).

=*Chiloscyphus nigrescens* Lindenb. et Hampe, *Linnaea* 24(3): 640, 1851 (Hampe 1851b), syn. fide Grolle (1960a). Lectotype (Grolle 1960a): Costa Rica, Cartago, ad crateris Reventado aguas stagnantes, *Oersted s.n.* (S-B22184 https://herbarium.nrm.se/specimens/B22184, isolectotypes S, JE-04002254 https://je.jacq.org/JE04002254).

≡*Leioscyphus nigrescens* (Lindenb. et Hampe) Steph., *Bull. Herb. Boissier*, sér. 2, 6(3): 224 (=*Sp. Hepat. [Stephani]* 3: 24), 1906 (Stephani 1906a).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Arnell 1963; Grolle 1969a, 1971b, 1972d; Bizot and Pócs 1974; Gradstein et al. 1977, 2001b; Engel 1990; Gradstein 1999a, 2021; Gradstein and Costa 2003; Dauphin 2005 as *Chiloscyphus vermicularis*; Gradstein and Holz 2005; Santos 2008; Schäfer-Verwimp 2014; Schuster 2021); S. loc., *Oersted* (YU, G, S, **Hampe 1851a** as *Chiloscyphus nigrescens*). CARTAGO: Im Kratersee Reventado, oja de Pascado, 3,300 m, *Oersted* (S, **Müller 1851** as *Chiloscyphus nigrescens*; **Grolle 1960a** as *Chiloscyphus nigrescens*, **1962a** as *Leioscyphus nigrescens*); Oreamuno cantón, Reventado (**Stephani 1908e** as *Chiloscyphus nigrescens*); Oreamuno cantón, Reventado prope Irazu, *Oersted* (S, ex hb. Lehmann, **TYPE** of *Chiloscyphus*

nigrescens, **Polakowsky 1879** as *Chiloscyphus nigrescens*; **Stephani 1906a** as *Leioscyphus nigrescens*; **Bonner 1963b** as *Chiloscyphus nigrescens*; **Engel 1978**; **Morales 1991**; **Dauphin 2005** as *Chiloscyphus vermicularis*); Oreamuno cantón, Rio Reventado, 3,050 m (S, **Engel 1980**); Paraíso cantón, Orosi, 10 km SSE of Tapantí, 1,500–1,550 m, *Engel 8343* (F, **Engel 1980**; **Morales 1991**; **Dauphin 2005** as *Chiloscyphus vermicularis*); Paraíso cantón, Tapantí, ~10 km SSE de, 1,500–1,550 m, *Engel 8397* (F, **Engel 1980**; **Morales 1991**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005 as *Chiloscyphus vermicularis*); Moravia cantón, La Palma (Dauphin 2005 as *Chiloscyphus vermicularis*); Moravia cantón, La Palma, ~1,575 m, *Engel 8815*, *8819* (F, **Engel 1980**; **Morales 1991**; **Dauphin 2005** as *Chiloscyphus vermicularis*); Pérez Zeledón cantón, Cerro Buenavista, *Dauphin 2234* (CR, **Dauphin 2005** as *Chiloscyphus vermicularis*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30976* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,480 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30896* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30946* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Papuasia, Australia, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Cololejeunea (Spruce) Steph., *Hedwigia* 30(5): 208, 1891 (Stephani 1891a).

Cololejeunea antillana Pócs, *Polish Bot. J.* 54(1): 3, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea longifolia* Jovet-Ast, *Rev. Bryol. Lichénol.* 16(1/2): 23, 1948 (Jovet-Ast 1947). Type: Guadeloupe.

EL SALVADOR. S. loc. (Pócs 1984c as *Aphanolejeunea longifolia*; Lücking 1995 as *Aphanolejeunea longifolia*; Dauphin et al. 1998 as *Aphanolejeunea longifolia*; Fischer and Vanderpoorten 2010). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/29/1*, *B/1/c/1*, *B/5/c/4* (**Winkler 1967** as *Aphanolejeunea longifolia*).

COSTA RICA. S. loc. (Eggers et al. 1998 as *Aphanolejeunea longifolia*; Fischer and Vanderpoorten 2010). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea longifolia*); Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/28* (**Eggers et al. 2001** as *Aphanolejeunea longifolia*). GUANACASTE: Caribbean slope N of Tenorio, 500 m, 3 Feb 1985, *Eggers CR 3/49* (**Eggers et al. 2001** as *Aphanolejeunea longifolia*); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea longifolia*). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea longifolia*); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea longifolia*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea longifolia*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-498* (**Dauphin 2005** as *Aphanolejeunea longifolia*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-386* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea longifolia*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-498* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea longifolia*; **Dauphin et al. 1998** as *Aphanolejeunea longifolia*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea longifolia*). PUNTARENAS: Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea longifolia*).

PANAMA. S. loc. (Fischer and Vanderpoorten 2010). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 668*, *691 p.p.* (PMA, **Sierra et al. 2019a**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Armour 25–26, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3215* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea longifolia*, **2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea appressa (A.Evans) Benedix, *Feddes Repert. Spec. Nov. Regni Veg. Beih.* 134: 31, 1953 (Benedix 1953).

≡*Leptocolea appressa* A.Evans, *Bull. Torrey Bot. Club* 39(12): 606, 1913 (Evans 1912c). Type: Jamaica.

COSTA RICA. CARTAGO: Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/5* (**Eggers et al. 2001**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,580 m, *Schäfer-Verwimp & Verwimp 34399/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea azorica V.Allorge et Jovet-Ast, *Mitt. Thüring. Bot. Ges.* 1(2/3): 17, 1955 (Allorge and Jovet-Ast 1955). Type: Azores.

≡*Aphanolejeunea azorica* (V.Allorge et Jovet-Ast) Bern.-Lück. et Pócs, *Mem. New York Bot. Gard.* 87: 109, 2003 (Gradstein and Costa 2003).

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aphanolejeunea azorica*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Aphanolejeunea azorica*). HUEHUETENANGO: Nentón municipio, La Bendición de Dios, Montaña La Virgen, 16°01′18″N, 91°32′21″W, *Pérez 1689* (USCG, Pérez 2009 as *Aphanolejeunea azorica*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30920, 31914 p.p.* (JE, **Schäfer-Verwimp 2014**).

Also reported from Macaronesia, Mexico, Northern South America, Western South America, Brazil.

Cololejeunea berneckerae Pócs, *Polish Bot. J.* 54(1): 4, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea pocsii* Bern.-Lück., *Diversit. Mikrohab. Epiphyll Moose*: 51, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in a thesis).

≡*Aphanolejeunea pocsii* Bern.-Lück., *Nova Hedwigia* 66(1/2): 168, 1998 (Bernecker-Lücking 1998a). Holotype: Costa Rica, Limón, Pococí, P. N. Braulio Carrillo, Quebrada González along the Botarrama trail, 10°12′N, 83°55′W, 460–480 m, Jun 1992, *Bernecker-Lücking 92-439* (G-00120477 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=242693&lang=en, EGR isotype).

COSTA RICA. S. loc. (Holz et al. 2001 as *Aphanolejeunea pocsii*; Pócs and Bernecker 2009). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea pocsii*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-233* (ULM, hb. Lücking, **Lücking 1995** as *Aphanolejeunea pocsii*; **Bernecker-Lücking 1998a** as *Aphanolejeunea pocsii*; **Dauphin 2005** as *Aphanolejeunea pocsii*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-439* (G, EGR, hb. Lücking, **TYPE** of *Aphanolejeunea pocsii*, **Lücking 1995** as *Aphanolejeunea pocsii*; **Bernecker-Lücking 1998a** as *Aphanolejeunea pocsii*; **Kis 2004** as *Aphanolejeunea pocsii*; **Crosby and Engel 2006** as *Aphanolejeunea pocsii*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-463* (hb. Lücking, **Dauphin 2005** as *Aphanolejeunea pocsii*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-467* (GOET, hb. Lücking, **Lücking 1995** as *Aphanolejeunea pocsii*; **Bernecker-Lücking 1998a** as *Aphanolejeunea pocsii*; **Dauphin 2005** as *Aphanolejeunea pocsii*; **Pócs et al. 2014**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-468*, *92-542* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea pocsii*; **Bernecker-Lücking 1998a** as *Aphanolejeunea pocsii*).

Not found outside Central America.

Cololejeunea bischleriana Tixier, *Bradea* 3(6): 36, 1980 (Tixier 1980). Type: Colombia.

COSTA RICA. SAN JOSÉ: Dota cantón, San Gerardo, "Los Robles," 2,200 m, 28 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0273/C* (EGR, **Lüth and Schäfer-Verwimp 2004**); Dota cantón, San Gerardo, 10 Nov 1993, *Carranza*, det. Pócs 2013 (EGR!, **this publication**); Dota cantón, San Gerardo, Los Robles, 2,200 m, *Schäfer-Verwimp & Holz SV/H-0273c* (**Dauphin 2005**).

Also reported from Western South America, Brazil.

Cololejeunea camillii (Lehm.) A.Evans, *Bryologist* 15(4): 59, 1912 (Evans 1912b).

≡*Lejeunea camillii* Lehm., *Nov. Stirp. Pug.* 10: 15, 1857 (Lehmann 1857). Type: Cuba.

≡*Aphanolejeunea camillii* (Lehm.) R.M.Schust., *Hepat. Anthoc. N. Amer.* 4: 1297, 1980 (Schuster 1980d).

=*Physocolea elliptica* Steph., *Sp. Hepat. (Stephani)* 5: 876, 1916 (Stephani 1916a), syn. fide Pócs et al. (2014). Lectotype (Söderström and Hentschel 2023: 15): Guatemala, Alta Verapaz, Cobán, 1,600 m, *Türckheim 5826* (G-00069375 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115764&lang=en, isolectotype JE-04002248 https://je.jacq.org/JE04002248).

≡*Cololejeunea elliptica* (Steph.) S.W.Arnell, *Svensk Bot. Tidskrift* 53(4): 503, 1959 (Arnell 1959), nom. inval. (ICN2018 Art. 41.1; basionym not cited).

=*Cololejeunea aloba* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 171, 1951 (Herzog 1951), syn. fide Dauphin (2005). Type: Costa Rica, Prov. Guanacaste, Naranjos Agrios, 600–700 m, on fern leaf, *Standley 46.490/a* (JE).

GUATEMALA. S. loc. (**Stephani 1916a** as *Physocolea elliptica*; Arnell 1959 as *Cololejeunea elliptica*; **Geissler and Bischler 1989** as *Physocolea elliptica*; **Fulford and Sharp 1990** as *Physocolea elliptica*; Eggers et al. 2004 as *Aphanolejeunea camillii*); S. loc., 1908, *Türckheim* (**Pócs et al. 2014** as *Physocolea elliptica*). ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim 5826* (G-00069375 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115764&lang=en, **TYPE** of *Physocolea elliptica*).

COSTA RICA. S. loc. (**Lücking et al. 2010** as *Aphanolejeunea camillii*). GUANACASTE: Tilarán cantón, Arenal, Naranjos Agrios, 600–700 m, *Standley & Valerio 46490a* (JE, **TYPE** of *Cololejeunea aloba*, **Herzog 1951** as *Cololejeunea aloba*; **Morales 1991** as *Cololejeunea aloba*; **Dauphin 2005** as *Aphanolejeunea camillii*). HEREDIA: Barva cantón, between Montana and Volcán Barva, 2,000 m, 2 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea camillii*); Barva cantón, between Montana and Volcán Barva, 2,000 m, 1 Feb 1982, *Eggers CR 1/208*, det. Pócs (EGR, **Eggers et al. 2001** as *Aphanolejeunea camillii*); Barva cantón, Montana de la Barva, 2,000 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea camillii*). ?SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Aphanolejeunea camillii*). Note: A specimen possibly corresponding to this report (CR-3747147) has only been identified as *Aphanolejeunea* cf. *camillii*.

PANAMA. Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito,

1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, surroundings of Finca La Suiza, 8°39′N, 82°12′W, 1,570 m, *Schäfer-Verwimp & Verwimp 34398/A*, det. Pócs (JE, EGR, MO-6690269, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,571 m, *Schäfer-Verwimp & Verwimp 34398/B* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, ~Torre Lutz, 20–170 m, *Dauphin 3087* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, *Dauphin 3070 p.p.* (PMA!, **this publication**); La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3080* (PMA!, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, Escaleras Antiguo Comedor, 20–170 m, *Dauphin 3210* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, Pearson 12, 20–170 m, *Dauphin 3111* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, Shannon 0–2, 2003, *Dauphin 3080*, *3087*, *3210*, *3222* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon 0–5, 20–170 m, *Dauphin & Moser 3126* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, Shannon 0–5, 20–170 m, *Dauphin 3070 p.p.* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado Island, Zetek 15, 20–170 m, *Dauphin 3224* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea camillii*); La Chorrera distrito, Barro Colorado, Standley, 2003, *Dauphin 3126* (PMA, **Dauphin et al. 2022**). *PANAMA: Panamá distrito, Parque National Soberania, sendero Camino de Cruces, 9°06′08″N, 79°36′56″W, 12 Mar 1996, *Reiner-Drehwald 960006*, det. Pócs 1996 (EGR!, **this publication**). VERAGUAS: Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30793*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 615* (hb. Bernecker, **Bernecker-Lücking 2000** as *Aphanolejeunea camillii*); S. loc. (Dauphin 1999 as *Aphanolejeunea camillii*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cololejeunea cardiocarpa (Mont.) A.Evans, *Mem. Torrey Bot. Club* 8(2): 172, 1902 (Evans 1902b).

≡*Lejeunea cardiocarpa* Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 476, 1842 (Montagne 1842b). Type: Cuba.

≡*Leptocolea cardiocarpa* (Mont.) A.Evans, *Bull. Torrey Bot. Club* 38(6): 268, 1911 (Evans 1911b).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers BEZ 3/9*, *BEZ 4/9* (**O'Shea et al. 1997**). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/7* (hb. Eggers, **O'Shea et al. 1997**).

HONDURAS. S. loc. (Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Leptocolea cardiocarpa*); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 54590*, *55590*, *56556* (JE, F, US, **Herzog 1951**).

EL SALVADOR. CHALATENANGO: San Ignacio municipio, Cerro el Pittal, *Winkler C/2* (**Winkler 1967** as *Leptocolea cardiocarpa*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). *ALAJUELA: Los Chiles cantón, Refugio de Vida Silvestre Caño Negro, Sep 1991, *Ruiz*, det. Pócs 2000 (USJ, EGR!, **this publication**). CARTAGO: Rio Turrialba (Eggers 2001); Turrialba cantón, CATIE, *Bayer 2220 p.p.* (**Dauphin 2005**); Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Dominical, 20 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, Poachers Peninsula, irrigation plot 1, *Salazar Allen & Chung 7279* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 7*, *29 p.p.* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**). VERAGUAS: Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Playa Hermosa, subiendo a la falla y tomando hacia playa Santa Clara, 7°30′03.0″N, 81°52′26.9″W, 1995–1996, *Aranda 2516* (MA, PMA, **Salazar Allen and Chung 1997a**); Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30796* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995, 1999); Wafer Bay, 0 m, Apr 1992, *Lücking 491* (USJ, **Bernecker-Lücking 2000**); Wafer Bay, 0 m, Apr 1992, *Lücking 494* (ULM, **Bernecker-Lücking 2000**); Wafer Bay, 0 m, Apr 1992, *Lücking 647* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Indian Subcontinent, Papuasia, Australia, New Zealand, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cololejeunea cingens (Herzog) Bernecker et Pócs, *Polish Bot. J.* 54(1): 4, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea cingens* Herzog, *Svensk Bot. Tidskr.* 46(1): 104, 1952 (Herzog 1952). Type: Ecuador.

***BELIZE.** S. loc., 22 Jun 1974, *Dwyer*, det. Reyes (EGR!, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp 1999 as *Aphanolejeunea cingens*; Eggers et al. 2004 as *Aphanolejeunea cingens*; Pócs and Bernecker 2009; Gradstein and León-Yánez 2011 as *Aphanolejeunea cingens*). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea cingens*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea cingens*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-270* (USJ, **Gradstein et al. 1994** as *Aphanolejeunea cingens*; **Dauphin 2005** as *Aphanolejeunea cingens*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-169*, *92-170*, *92-237*, *92-370*, *92-454* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea cingens*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea cingens*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Aphanolejeunea cingens*). SAN JOSÉ: Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea cingens*).

PANAMA. COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 700*, *700 p.p.*, *etc.* (PMA, **Sierra and Dauphin 2016**; **Sierra et al. 2019a**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

****Cololejeunea contractiloba*** A.Evans, *Amer. J. Bot.* 5(3): 131, 1918 (Evans 1918). Type: USA, Florida.

***BELIZE.** *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 6 Dec 1996, *Allen 18024 p.p.*, det. Dauphin May 2017 (MO-6699952! https://tropicos.org/specimen/100986396, **this publication**).

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, Cerro Waylawás (Peñas Blancas), 13°39′N, 84°48′W, 28 Oct 1982, *Grijalva 1714 p.p.*, det. Dauphin May 2017 (MO-6699953! http://tropicos.org/specimen/100986393, **this publication**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America(?), Brazil.

Cololejeunea costaricensis (Bern.-Lück.) Bernecker et Pócs, *Polish Bot. J.* 54(1): 5, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea costaricensis* Bern.-Lück., *Diversit. Mikrohab. Epiphyll Moose*: 51, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in a thesis).

≡*Aphanolejeunea costaricensis* Bern.-Lück., *Nova Hedwigia* 66(1/2): 164, 1998 (Bernecker-Lücking 1998a). Holotype: Costa Rica, Limón, Pococí, P. N. Braulio Carrillo, Quebrada González, 10°12′N, 83°55′W, 460–480 m, transition between tropical lowland and premontane rainforest zone, primary forest along the Botarrama trail, on leaves of *Ctenitis subincisa*, Jun 1992, *Bernecker-Lücking 92-471* (G-00120475 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=243727&lang=en, isotype USJ).

COSTA RICA. S. loc. (**Schäfer-Verwimp 1999** as *Aphanolejeunea costaricensis*; Holz et al. 2001 as *Aphanolejeunea costaricensis*; Eggers et al. 2004 as *Aphanolejeunea costaricensis*; Lavocat Bernard et al. 2009 as *Aphanolejeunea costaricensis*; Pócs and Bernecker 2009; Schäfer-Verwimp and Reiner-Drehwald 2009 as *Aphanolejeunea costaricensis*). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*); Sarapiquí cantón, Puerto Viejo, 100 m, *Eggers*, det. Pócs (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea costaricensis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-158* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea costaricensis*; **Dauphin 2005** as *Aphanolejeunea costaricensis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea costaricensis*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 460–480 m, Jun 1992, *Lücking 92-159*, *92-160* (hb. Lücking, **Bernecker-Lücking 1998a** as *Aphanolejeunea costaricensis*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-269*, *92-368*, *92-458* (EGR, hb. Lücking, **Lücking 1995** as *Aphanolejeunea costaricensis*; **Bernecker-Lücking 1998a** as *Aphanolejeunea costaricensis*; **Dauphin 2005** as *Aphanolejeunea costaricensis*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 460–480 m, Jun 1992, *Lücking 92-471* (G-00120475 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=243727&lang=en, USJ, **TYPE** of *Aphanolejeunea costaricensis*, **Lücking 1995** as *Aphanolejeunea costaricensis*; **Bernecker-Lücking 1998a** as *Aphanolejeunea costaricensis*; **Dauphin 2005** as *Aphanolejeunea costaricensis*; **Crosby and Engel 2006** as *Aphanolejeunea costaricensis*; **Pócs et al. 2014**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*). PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Aphanolejeunea costaricensis*); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*). SAN JOSÉ: Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W,

25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0087*, det. Pócs 2003 (EGR!, **this publication**); Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001** as *Aphanolejeunea costaricensis*); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea costaricensis*).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 457* (hb. Bernecker, **Bernecker-Lücking 2000** as *Aphanolejeunea costaricensis*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 614* (ULM, **Bernecker-Lücking 2000** as *Aphanolejeunea costaricensis*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 618* (USJ, **Bernecker-Lücking 2000** as *Aphanolejeunea costaricensis*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 502* (hb. Bernecker, **Bernecker-Lücking 2000** as *Aphanolejeunea costaricensis*); S. loc. (Dauphin 1999 as *Aphanolejeunea costaricensis*).

Also reported from the Caribbean.

Cololejeunea cremersii Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 229, 1995 (Tixier 1995).

≡*Cololejeunea cremersii* Tixier, *Candollea* 46(2): 271, 1991 (Tixier 1991), nom. inval. (ICN2018 Art. 40.2; based on more than one gathering). Type: French Guiana.

=*Cololejeunea fefeana* Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 229, 1995 (Tixier 1995), syn. fide Pócs in Gradstein and Ilkiu-Borges (2009). Type: Guadeloupe.

COSTA RICA. S. loc. (Gradstein 2021). *ALAJUELA: Los Chiles cantón, Refugio de Vida Silvestre Caño Negro, Sep 1991, *Ruiz*, det. Pócs 2000 (USJ, EGR!, **this publication**). HEREDIA: Barva cantón, between Montana and Volcán Barva, 2,000 m, 1 Feb 1982, *Eggers CR 1/208*, det. Pócs (EGR, **Eggers et al. 2001** as *Cololejeunea fefeana*).

Also reported from the Caribbean, Northern South America, Western South America(?).

Cololejeunea crenata (A.Evans) Pócs, *Polish Bot. J.* 54(1): 5, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea crenata* A.Evans, *Bull. Torrey Bot. Club* 38(6): 276, 1911 (Evans 1911b). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 28* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Aphanolejeunea crenata*).

EL SALVADOR. S. loc. (Pócs 1984c as *Aphanolejeunea crenata*; Fulford and Sharp 1990 as *Aphanolejeunea crenata*; Lücking 1995 as *Aphanolejeunea crenata*; Lavocat Bernard et al. 2009 as *Aphanolejeunea crenata*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/23/7* (**Winkler 1967** as *Aphanolejeunea crenata*).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Aphanolejeunea crenata*; **Holz and Gradstein 2005b** as *Aphanolejeunea crenata*). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea crenata*). HEREDIA: Barva cantón, Volcán Barva, 1,950 m (Eggers 2001 as *Aphanolejeunea crenata*); Barva cantón, Volcán Barva, *Morales 2245* (USJ, **Morales 1991** as *Aphanolejeunea crenata*; **Dauphin 2005** as *Aphanolejeunea crenata*); San Isidro cantón, Cerro Caricias, ~2,000 m (Eggers 2001 as *Aphanolejeunea crenata*); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Herzog 1951** as *Aphanolejeunea crenata*; **Morales 1991** as *Aphanolejeunea crenata*; **Dauphin 2005** as *Aphanolejeunea crenata*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea crenata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-495* (**Dauphin 2005** as *Aphanolejeunea crenata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-495* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea crenata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea crenata*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Aphanolejeunea crenata*); Dota cantón, San Gerardo (Dauphin 2005 as *Aphanolejeunea crenata*).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Cololejeunea diaphana A.Evans, *Bull. Torrey Bot. Club* 32(4): 184, 1905 (Evans 1905b). Type: USA, Florida.

=*Lejeunea ensifolia* Spruce var. *pygmaea* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 298, 1884 (Spruce 1884), syn. fide Dauphin et al. (2008). Type: Brazil.

≡*Cololejeunea ensifolia* (Spruce) Steph. var. *pygmaea* (Spruce) Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 174, 1951 (Herzog 1951).

=*Aphanolejeunea truncatifolia* Horik., *J. Sci. Hiroshima Univ., Ser. B, Div. 2, Bot.* 2: 284, 1934 (Horikawa 1934). Type: Taiwan.

=*Cololejeunea ensifolia* (Spruce) Steph. f. *genuina* Herzog, *Rev. Bryol. Lichenol.* 20(1/2): 174, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, *Standley 55577* (JE-04010816 https://je.jacq.org/JE04010816).

=*Cololejeunea ensifolia* (Spruce) Steph. f. *angustifolia* Herzog, *Rev. Bryol. Lichenol.* 20(1/2): 174, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, *Standley 54846 p.p.* (JE-04010815 https://je.jacq.org/JE04010815).

=*Cololejeunea diaphana* var. *cristulata* R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 72(1): 112, 1956 (Schuster 1956b), syn. fide Pócs and Lücking (1997). Type: USA, Florida.

≡*Aphanolejeunea diaphana* var. *cristulata* (R.M.Schust.), R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 1298, 1980 (Schuster 1980d).

≡*Aphanolejeunea subdiaphana* (Jovet-Ast) Pócs var. *cristulata* (R.M.Schust.) Pócs, *J. Hattori Bot. Lab.* 55: 311, 1984 (Pócs 1984c).

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aphanolejeunea truncatifolia*). BAJA VERAPAZ: Purhulhá municipio,

Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 526* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Aphanolejeunea truncatifolia*). HUEHUETENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aphanolejeunea truncatifolia*).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers & Timm BEZ 3/10*, det. Eggers (**Eggers et al. 2004** as *Aphanolejeunea truncatifolia*); Mountain Pine Ridge, Cave Rio Frio, ~600 m, 1996, *Eggers & Timm BEZ 2/40*, det. Eggers (**Eggers et al. 2004** as *Aphanolejeunea truncatifolia*). ORANGE WALK: Rio Bravo Reserve, 1996, *Eggers & Timm BEZ 4/12*, det. Eggers (**Eggers et al. 2004** as *Aphanolejeunea truncatifolia*). STANN CREEK: Cockscombe Reserve, 1996, *Eggers & Timm BEZ 5/4*, det. Eggers (**Eggers et al. 2004** as *Aphanolejeunea truncatifolia*). TOLEDO: Monkey River, 1–5 m, 1996, *Eggers & Timm BEZ 7/2*, det. Eggers (**Eggers et al. 2004** as *Aphanolejeunea truncatifolia*).

HONDURAS. S. loc. (Winkler 1967). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54846 p.p.* (JE-04010816, **Herzog 1951** as *Cololejeunea ensifolia* f. *angustifolia*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55577 p.p.* (JE-04010815, **Herzog 1951** as *Cololejeunea ensifolia* f. *genuina*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/24/3* (**Winkler 1967**).

COSTA RICA. CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2252 p.p.*, det. Morales (USJ, **Morales 1991** as *Aphanolejeunea diaphana* var. *cristulata*); Paraíso cantón, Tapanti National Park, *Morales 2052* (USJ, **Morales 1991** as *Aphanolejeunea diaphana* var. *cristulata*; **Dauphin 2005** as *Aphanolejeunea truncatifolia*). *HEREDIA: Barva cantón, Volcán Barva, 1 Feb 1985, *Eggers CR 1/277*, det. Pócs 2003 (EGR!, **this publication**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Aphanolejeunea subdiaphana* var. *cristulata*). *SAN JOSÉ: Genesis II Forest Reserve, Cordillera de Talamanca, Apr 1997, *Lücking 97-1*, det. Pócs 2013 (EGR!, **this publication**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30907*, det. Pócs (JE, EGR!, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,640–1,650 m, *Schäfer-Verwimp & Verwimp 34417/D*, *34418/E* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30743*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

Cololejeunea ecuadoriensis Pócs, *Acta Bot. Hung.* 44(3/4): 372, 2002 (Pócs 2002). Type: Ecuador.

PANAMA. S. loc. (Gradstein 2021). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30802/C*, conf. Pócs (JE, **Schäfer-Verwimp 2014**).

Also reported from Western South America.

Cololejeunea gracilis (Jovet-Ast) Pócs, *Cryptog. Bryol.* 29(3): 233, 2008 (Dauphin et al. 2008) var. ***gracilis***.

≡*Aphanolejeunea gracilis* Jovet-Ast, *Rev. Bryol. Lichénol.* 16(1/2): 21, 1948 (Jovet-Ast 1947). Type: Guadeloupe.

=*Lejeunea heterophylla* K.I. Goebel, *Pflanzenbiol. Schilderungen* 1: 178, 179, 1889 (Goebel 1889), nom. illeg. (ICN2018 Art. 53.1; hom. illeg. non Sande Lac. 1856), syn. fide Pócs and Bernecker (2009). Type: Puerto Rico.

≡*Aphanolejeunea heterophylla* R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 71: 128, 1955 (Schuster 1955a).

GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aphanolejeunea gracilis*).

EL SALVADOR. S. loc. (Pócs 1984c as *Aphanolejeunea gracilis*; Lücking 1995 as *Aphanolejeunea gracilis*; Eggers et al. 1998 as *Aphanolejeunea gracilis*; Ilkiu-Borges 2000 as *Aphanolejeunea gracilis*; Linares and Uribe 2002 as *Aphanolejeunea gracilis*; Schäfer-Verwimp and Pócs 2009). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/4/3*, *A/31/4*, *B/1/b/7*, *etc.* (**Winkler 1967** as *Aphanolejeunea gracilis*).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Aphanolejeunea gracilis*; **Holz and Gradstein 2005b** as *Aphanolejeunea gracilis*); S. loc. (Eggers et al. 1998 as *Aphanolejeunea gracilis*; Ilkiu-Borges 2000 as *Aphanolejeunea gracilis*; Linares and Uribe 2002 as *Aphanolejeunea gracilis*; Schäfer-Verwimp and Pócs 2009; **Lücking et al. 2010** as *Aphanolejeunea gracilis*); S. loc., 22–24 Sep 2000, *Piippo* (H, **Ahonen 2004** as *Aphanolejeunea gracilis*; **He-Nygrén et al. 2004** as *Aphanolejeunea gracilis*, **2006** as *Aphanolejeunea gracilis*; **Gradstein et al. 2006b** as *Aphanolejeunea gracilis*, **2011**). ALAJUELA: San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Morales 2054* (**Morales 1992** as *Aphanolejeunea heterophylla*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2180* (USJ, **Morales 1991** as *Aphanolejeunea gracilis*; **Dauphin 2005** as *Aphanolejeunea gracilis*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-76*, *91-77*, *92-154*, *92-232*, *92-267*, *92-413*, *92-440*, *92-472*, *92-489*, *92-496*, *92-606* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea gracilis*); Pococí cantón, Braulio Carrillo National Park, Botarrama, *Dauphin 2967 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005** as *Aphanolejeunea gracilis*); Pococí

cantón, Braulio Carrillo National Park, Botarrama, *Lücking 92-472* (**Dauphin 2005** as *Aphanolejeunea gracilis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea gracilis*). PUNTARENAS: Coto Brus cantón, San Vito, Fila Cruces, 1 Jan 1979, *Kalb 70*, det. Pócs 1995 (EGR!, **this publication**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Aphanolejeunea gracilis*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,500 m, 8 Mar 1992, *Lyon 219E*, det. Whittemore 1995 (MO-4411481! https://tropicos.org/specimen/90050854, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Aphanolejeunea gracilis*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Aphanolejeunea gracilis*); Dota cantón, San Gerardo (Dauphin 2005 as *Aphanolejeunea gracilis*); Pérez Zeledón cantón, Rivas, San Gerardo, 27 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0239/B*, det. Pócs (EGR!, **this publication**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30987*, conf. Pócs (JE, EGR, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30938* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,560–1,650 m, *Schäfer-Verwimp & Verwimp 34395/B*, *34418/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34640/B* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30781*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 663*, *664*, *etc.* (PMA, **Sierra et al. 2019a**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Shannon 0–2, 9°09′N, 79°51′W, 20–170 m, 3 Feb 2003, *Dauphin 3070 p.p.* (EGR, PMA, **Dauphin et al. 2006** as *Aphanolejeunea gracilis*); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3070* (PMA, **Dauphin et al. 2022**).

***COCOS I.** S. loc. (Dauphin 1995 as *Aphanolejeunea heterophylla*); Llanos de Palo de Hierro, 1 Jul 2016, *Sánchez, Estrada & Acosta 2759*, det. Dauphin 2016 (CR-283711!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea guadelupensis Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 229, 1995 (Tixier 1995).

≡*Cololejeunea guadelupensis* Tixier, *Candollea* 46(2): 276, 1991 (Tixier 1991), nom. inval. (ICN2018 Art. 40.6; type not explicitly indicated). Type: Guadeloupe.

BELIZE. S. loc. (Eggers et al. 2004). STANN CREEK: Cockscombe Reserve, 17 Mar 1996, *Eggers BEZ 5/24* (**Eggers et al. 2001**).

COSTA RICA. S. loc. (Eggers et al. 2004 as *Cololejeunea guadelupensis*). CARTAGO: Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/28* (**Eggers 2001**; **Eggers et al. 2001** as *Cololejeunea guadelupensis*). GUANACASTE: Caribbean slope N of Tenorio, 500 m, 3 Feb 1985, *Eggers CR 3/49* (**Eggers et al. 2001** as *Cololejeunea guadelupensis*); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001**). LIMÓN: Guácimo cantón, Jalova, southern border of the Tortuguero National Park, 2 m, 19 Feb 1985, *Eggers CR 12/7* (**Eggers et al. 2001**); Pococí cantón, Tortuga Lodge near Tortuguero, 21 Feb 1985, *Eggers CR 12/82* (**Eggers 2001**; **Eggers et al. 2001**).

Also reported from the Caribbean.

Cololejeunea jamesii (Austin) M.E.Reiner et Pócs, *Phytotaxa* 208(1): 98, 2015 (Pócs et al. 2015b).

≡*Lejeunea jamesii* Austin, *Bull. Torrey Bot. Club* 6(30): 158, 1877 (Austin 1877). Type: Mexico.

=*Cololejeunea clavatopapillata* Steph., *Hedwigia* 34(5): 246, 1895 (Stephani 1895c), syn. fide Pócs et al. (2015b). Type: Brazil.

≡*Aphanolejeunea clavatopapillata* (Steph.) M.E.Reiner, *Trop. Bryol.* 10: 35, 1995 (Reiner-Drehwald 1995a).

GUATEMALA. EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011** as *Aphanolejeunea clavatopapillata*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Cololejeunea clavatopapillata*; Cañiza et al. 2017). SAN JOSÉ: Mora, Tabarcia, 850 m, *Alfaro 14* (USJ, **Dauphin et al. 1998** as *Aphanolejeunea clavatopapillata*; **Dauphin 2005** as *Aphanolejeunea clavatopapillata*); Pérez Zeledón cantón, Cordillera de Talamanca, valley of the Rio Chirripo Pacifico above San Gerardo de Rivas, 1,600 m, 27 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0239/D* (**Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea clavatopapillata*); Pérez Zeledón cantón, Rivas, San Gerardo, *Schäfer-Verwimp & Holz SV/H-0239/d* (**Dauphin 2005** as *Aphanolejeunea clavatopapillata*).

PANAMA. S. loc. (Cañiza et al. 2017). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,340 m, *Schäfer-Verwimp & Verwimp 34337/A* (JE, **Schäfer-Verwimp 2014** as *Cololejeunea clavatopapillata*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa,

Indian Subcontinent, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cololejeunea linopteroides H.Rob., *Bryologist* 67(4): 457, 1964 (Robinson 1964). Holotype: Costa Rica, Alajuela, San Antonio de Zarcero, *Smith 48/312* (US-00070839 http://n2t.net/ark:/65665/369b8910b-28f8-4b98-8dcb-ae789e42fe16).

=*Cololejeunea gradsteinii* A.Lücking, *Diversit. Mikrohab. Epiphyll Moose*: 66, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in thesis), syn. fide Bernecker-Lücking and Morales (1999). Original material: Costa Rica, Limón, Pococí, Sendero Botarrama, *Bernecker-Lücking 91-121*, *91-122*, *92-482*, *92-512*, *etc.*

GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014); S. loc., *Carranza* (GOET, **Yu et al. 2013**; **Renner and de Lange 2020**). ALAJUELA: San Carlos cantón, Arenal Volcano, *Pérez 8* (USJ, **Bernecker-Lücking and Morales 1999**); San Lorenzo cantón, Bajo Jamaical de Miramar, *Moya 13* (USJ, **Bernecker-Lücking and Morales 1999**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Dauphin 439* (USJ, **Bernecker-Lücking and Morales 1999**; Dauphin 2005); Zarcero cantón, San Antonio, 5 Mar 1948, *Smith 48/312* (US-00070839, **TYPE, Robinson 1964**; **Bernecker-Lücking and Morales 1999**; Pócs et al. 2014). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Tapanti National Park, *Morales & Moya 47954* (USJ, **Bernecker-Lücking and Morales 1999**). GUANACASTE: Tenorio Volcano, 6 Jun 1998, *Sánchez* (USJ, **Bernecker-Lücking and Morales 1999**); Tilarán cantón, Arenal, ~500 m (Eggers 2001); Tilarán cantón, Arenal, Naranjos Agrios, ~650 m (Eggers 2001); Tilarán cantón, Arenal, Naranjos Agrios, 600–700 m, *Standley & Valerio 46490a* (JE, **Bernecker-Lücking and Morales 1999**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001**); Sarapiquí cantón, La Selva Biological Station, *Dauphin* (USJ, **Bernecker-Lücking and Morales 1999**); Sarapiquí cantón, Puerto Vieje, Lago Hule, 27 Sep 1991, *Dauphin* (USJ, **Bernecker-Lücking and Morales 1999**); Sarapiquí cantón, Rara Avis, 700 m, 11–13 Jan 1994, *Cascante* (USJ, **Bernecker-Lücking and Morales 1999**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-121*, *91-122*, *92-118* (hb. Lücking, **Lücking 1995** as *Cololejeunea gradsteinii*; **Bernecker-Lücking and Morales 1999**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-15*, *92-406*, *92-407*, *92-482*, *92-512*, *92-515* (hb. Lücking, **Lücking 1995** as *Cololejeunea gradsteinii*; **Bernecker-Lücking and Morales 1999**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Sarapiqui cantón, La Selva, 100 m (Eggers 2001). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Experimental Station of the University of California, 17 Apr 1993, *Carranza 46100* (hb. Lücking ex USJ-46100, EGR, GOET, MO-5135685, **Lücking 1995** as *Cololejeunea gradsteinii*; **Bernecker-Lücking and Morales 1999**); Monteverde cantón, Monteverde Cloud Forest Preserve, Sep 1988, *Kjeldberg* (USJ, hb. Bernecker, **Bernecker-Lücking and Morales 1999**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Tarrazú cantón, Cerro Diamante, Apr 1997, *Guitérrez* (USJ, **Bernecker-Lücking and Morales 1999**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34418/A*, *34418/B*, *34418/E* (JE, EGR, MO-6690268, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Cololejeunea microscopica var. ***africana*** (Pócs) Pócs et Bernecker, *Cryptog. Bryol.* 29(3): 234, 2008 (Dauphin et al. 2008).

≡*Aphanolejeunea exigua* A.Evans var. *africana* Pócs, *Cryptog. Bryol. Lichénol.* 5(3): 247, 1984 (Pócs 1984b). Type: Tanzania.

≡*Aphanolejeunea microscopica* var. *africana* (Pócs) Pócs et Lücking, *Haussknechtia, Beih.* 7: 27, 1997 (Pócs and Lücking 1997).

=*Aphanolejeunea verrucosa* Jovet-Ast, *Rev. Bryol. Lichénol.* 16(1/2): 25, 1947 (Jovet-Ast 1947), syn. fide Pócs and Bernecker (2009). Type: Guadeloupe.

GUATEMALA. HUEHUETENANGO: S. loc., *Pérez 1677* (USCG, Pérez 2009 as *Aphanolejeunea microscopica* var. *africana*).

EL SALVADOR. S. loc. (Schäfer-Verwimp 1999 as *Aphanolejeunea verrucosa*; Lavocat Bernard et al. 2009 as *Aphanolejeunea verrucosa*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/12/6*, *B/6/b/4* (**Winkler 1967** as *Aphanolejeunea verrucosa*).

COSTA RICA. CARTAGO: El Guarco cantón, 3 de junio, 2,460 m, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0448/C* (**Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea microscopica* var. *africana*; **Dauphin 2005** as *Aphanolejeunea microscopica* var. *africana*). SAN JOSÉ: División, Monte Carmelo, Jan 1986, *Kappelle et al. 718a*, det. Pócs 1996 (EGR!, **this publication**); Dota cantón, San Gerardo, along Rio Savegre, 1,900 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0110* (**Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea microscopica* var. *africana*); Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950–2,000 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0059*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950–2,000 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0087*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Dota cantón, San Gerardo, Río Savegre,

Schäfer-Verwimp & Holz SV/H-0110 (**Dauphin 2005** as *Aphanolejeunea microscopica* var. *africana*); Pérez Zeledón cantón, Cerro de La Muerte km 84 of Pan-American Highway, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0190/B*, det. Pócs (EGR!, **Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea microscopica* var. *africana*; **this publication**).

PANAMA. *NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 9°05′45″N, 82°53′10″W, 12 Feb 1995, *Dauphin et al. 1583A*, det. G. Dauphin Oct 2020 (CR!, **this publication**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Shannon 0–2, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3066*, *3193* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea microscopica* var. *africana*); La Chorrera distrito, Barro Colorado Island, T. Barbour 26–27, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3199* (PMA, **Dauphin et al. 2006** as *Aphanolejeunea microscopica* var. *africana*).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cololejeunea microscopica var. ***exigua*** (A.Evans) Pócs, *Mem. New York Bot. Gard.* 76(4): 73, 2009 (Gradstein and Ilkiu-Borges 2009).

≡*Aphanolejeunea exigua* A.Evans, *Bull. Torrey Bot. Club* 38(6): 273, 1911 (Evans 1911b). Type: Puerto Rico.

≡*Aphanolejeunea microscopica* (Taylor) A.Evans var. *exigua* (A.Evans) A.Lücking and Pócs, *Haussknechtia Beih.* 7: 27, 1997 (Pócs and Lücking 1997).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 233* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Aphanolejeunea exigua*). HUEHUETENANGO: S. loc., *Pérez 1690* (USCG, Pérez 2009 as *Aphanolejeunea microscopica* var. *exigua*).

EL SALVADOR. S. loc. (Pócs 1984c as *Aphanolejeunea exigua*; Fulford and Sharp 1990 as *Aphanolejeunea exigua*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/12/6*, *B/6/a/5*, *B/6/d/6* (**Winkler 1967** as *Aphanolejeunea exigua*).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Aphanolejeunea exigua*; **Holz and Gradstein 2005b** as *Aphanolejeunea exigua*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2244*, *2251*, *2264* (USJ, **Morales 1991** as *Aphanolejeunea exigua* var. *exigua*; **Dauphin 2005** as *Aphanolejeunea microscopica* var. *exigua*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Aphanolejeunea exigua*). SAN JOSÉ: Dota cantón, San Gerardo, 1,905 m, *Schäfer-Verwimp & Holz SV/H-0049/F*, det. Pócs (EGR!, hb. Schäfer-Verwimp, **this publication**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Aphanolejeunea exigua*).

?COCOS I. S. loc. (Dauphin 1995 as *Aphanolejeunea exigua*). Note: We are not aware of any firsthand report from Cocos I.

Also reported from Northern Europe, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Indian Subcontinent, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea microscopica (Taylor) Schiffn., *Hepat. (Engl.-Prantl)*: 122, 1893 (Schiffner 1893a) var. ***microscopica***.

≡*Jungermannia microscopica* Taylor, *Fl. Hibern.* 2: 59, 1836 (Mackay 1836). Type: Ireland.

≡*Aphanolejeunea microscopica* (Taylor) A.Evans, *Bull. Torrey Bot. Club* 38(6): 273, 1911 (Evans 1911b).

GUATEMALA. EL PETÉN: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Aphanolejeunea microscopica* var. *microscopica*).

***COSTA RICA.** *CARTAGO: El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,460 m, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0467/A*, det. Pócs (MO!, EGR!, **this publication**). *SAN JOSÉ: Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950–2,000 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0034*, det. G. Dauphin Oct 2020 (CR-000377003!, **this publication**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30911*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15103* (PMA, **Dauphin et al. 2022**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Indian Subcontinent, Northern South America, Brazil. The species sensu lato is reported also from other areas, and some of those reports may belong to this variety.

Cololejeunea minuscula Pócs, *Polish Bot. J.* 54(1): 7, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea minuta* R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 1310, 1980 (Schuster 1980d). Type: USA, Florida.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). LIMÓN: Pococí cantón, Braulio Carrillo National Park, 500 m, *Schäfer-Verwimp & Holz SV/H-0300/B* (EGR, GOET, CR, STU, **Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea minuta*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 500 m, *Schäfer-Verwimp & Holz SV/H-0300b* (**Dauphin 2005** as *Aphanolejeunea minuta*).

?PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). Note: We are not aware of any firsthand report from Panama.

?COCOS I. S. loc. (Dauphin 1995 as *Aphanolejeunea minuta*). Note: We are not aware of any firsthand report from Cocos I.

Also reported from West-Central Tropical Africa, Southeastern USA, the Caribbean(?), Western South America, Brazil.

Cololejeunea minutilobula Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 171, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 6): Panama, Río Tapia, 7 Dec 1923–11 Jan 1924, *Standley 26176* (JE-04004064 https://je.jacq.org/JE04004064, isolectotypes JE-04000973 https://je.jacq.org/JE04000973 [microslide], US-00070983 http://n2t.net/ark:/65665/34d6b9a3a-a59d-455b-af8e-4a9e611388d8). Note: Herzog mistakenly placed the locality in Costa Rica ("ohne Fundortznotiz"), although the specimens in both JE and US clearly state they are from Panama.

≡*Cololejeunea papillifera* R.M.Schust., *Beih. Nova Hedwigia* 9: 177, 1963 (Schuster 1963b), nom. illeg. (ICN2018 Art. 52.1; earlier name included).

=*Physocolea microloba* Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras, Atlántida, Lancetilla Valley near Tela, *Standley s.n.*

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 1928, *Standley* (**Standley 1931** as *Physocolea microloba*).

COSTA RICA. S. loc. (Bonner 1977 as *Cololejeunea papillifera*; Cole 1982, 1983; Schäfer-Verwimp 1996; Gradstein and Costa 2003). HEREDIA: San Miguel de Sarapiquï, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Cololejeunea papillifera*); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Cololejeunea papillifera*); Sarapiquí cantón, Puerto Viejo, 100 m, *Eggers*, det. Pócs (hb. Eggers, **Eggers 2001** as *Cololejeunea papillifera*).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020** as *Cololejeunea* '*minutiloba*'); La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Gradstein & Salazar Allen 15141 p.p.* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3153 p.p.* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Fuertes Cove, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3113* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Shannon 4, 9°09′N, 79°51′W, 20–170 m, 2003, *Dauphin & Moser 3129* (PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado, Fuertes Cove, 2003, *Dauphin 3113* (CR, PMA, **Dauphin et al. 2022**). PANAMA: Panamá distrito, Río Tapia, *Standley 26176* (JE, US, **TYPE; Herzog 1951; Bonner 1963b; Morales 1991; Dauphin 2005; Pócs et al. 2014**); Panamá distrito, Río Tapia, 12 Jul 1923–11 Jan 1924, *Standley 26176* (JE-04004064 https://je.jacq.org/JE04004064, US-00070983 http://n2t.net/ark:/65665/34d6b9a3a-a59d-455b-af8e-4a9e611388d8, **this publication**).

Also reported from Northern South America, Brazil.

Cololejeunea moralesiae (Bern.-Lück.) Bernecker et Pócs, *Polish Bot. J.* 54(1): 7, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea moralesiae* Bern.-Lück., *Diversit. Mikrohab. Epiphyll Moose*: 51, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in thesis).

≡*Aphanolejeunea moralesiae* Bern.-Lück., *Nova Hedwigia* 66(1/2): 166, 1998 (Bernecker-Lücking 1998a). Holotype: Costa Rica, Limón, Pococí, P. N. Braulio Carrillo, Quebrada González, 10°12′N, 83°55′W, 460–480 m, transition between tropical lowland and premontane rainforest zone, primary forest along the Botarrama trail, on leaves of *Miconia hamelii*, Jun 1992, *Bernecker-Lücking 92-462* (G-00120476 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?lang=en&id=242680&l=ng=en; isotypes EGR, GOET, USJ).

COSTA RICA. S. loc. (Holz et al. 2001 as *Aphanolejeunea moralesiae*; Pócs and Bernecker 2009; Sierra et al. 2018a). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea moralesiae*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea moralesiae*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, 11 Apr 1993, *Lücking 92-511* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea moralesiae*; **Dauphin 2005** as *Aphanolejeunea moralesiae*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea moralesiae*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-462*, *92-463* (G, EGR, GOET, USJ, hb. Lücking, **TYPE** of *Aphanolejeunea moralesiae*, **Lücking 1995** as *Aphanolejeunea moralesiae*; **Bernecker-Lücking 1998a** as *Aphanolejeunea moralesiae*; **Kis 2004** as *Aphanolejeunea moralesiae*; **Dauphin 2005** as *Aphanolejeunea moralesiae*; **Crosby and Engel 2006** as *Aphanolejeunea moralesiae*; **Pócs et al. 2014**); Pococí cantón, Tortuguero, 1–5 m (Eggers 2001 as *Aphanolejeunea moralesiae*); Siquirres cantón, Rio Siquirres (Eggers 2001 as *Aphanolejeunea moralesiae*); Siquirres cantón, Rio Siquirres, Jul 1996, *Obando & Morales 2442* (USJ-47813, hb. Lücking, **Bernecker-Lücking 1998a** as *Aphanolejeunea moralesiae*). SAN JOSÉ: Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea moralesiae*).

Also reported from Brazil.

Cololejeunea obliqua (Nees et Mont.) Schiffn., *Bot. Jahrb. Syst.* 23(5): 586, 1897 (Schiffner 1897).

≡*Lejeunea obliqua* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 264, 1843 (Montagne 1843). Type: French Guiana.

=*Cololejeunea scabriflora* Gottsche ex Steph., *Hedwigia* 34(5): 251, 1895 (Stephani 1895c), syn. fide Tixier (1985). Type: Trinidad, Brazil.

≡*Leptocolea scabriflora* (Gottsche ex Steph.) A.Evans, *Bull. Torrey Bot. Club* 38(6): 262, 1911 (Evans 1911b).

=*Physocolea semidentata* Steph., *Sp. Hepat. (Stephani)* 5: 883, 1916 (Stephani 1916a), syn. fide Pócs et al. (2015a). Lectotype (Pócs et al. 2015a) or possibly holotype: Costa Rica, Cartago, Bois de la vallée de Tuis, bassin du Reventarzon, Sep 1893, *A. Tonduz*, hb. Cardot 15591 (G-00069367 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115606&lang=en, isolectotype JE-04004047 https://je.jacq.org/JE04004047).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 21*, *28*, *100*, *217*, *243*, *280* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del

Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PETÉN: Flores Municipio, Dos Lagunas, *Can et al.* (USCG, **Morales 2011**).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers BEZ 3/3* (**O'Shea et al. 1997**). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/6* (hb. Eggers, **O'Shea et al. 1997**).

HONDURAS. S. loc. (Lücking 1995); S. loc., 1903, *Wilson 603*, det. Pócs (EGR!, **this publication**). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Leptocolea scabriflora*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54810*, *54826*, *54841*, *etc.* (B, JE, FH, US, **Herzog 1951** as *Cololejeunea scabriflora*).

EL SALVADOR. S. loc. (Lücking 1995). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/32/γ/3*, *A/32/γ/9* (**Winkler 1967** as *Leptocolea scabriflora*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Cololejeunea scabriflora*; Zhu et al. 1999). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001**); Turrialba cantón, Vallée de Tuis, bassin de Reventazón, 600 m, Sep 1893, *Tonduz 15591* (G-00069367, **TYPE** of *Physocolea semidentata*, **Stephani 1916a** as *Physocolea semidentata*; **Geissler and Bischler 1989** as *Physocolea semidentata*; **Pócs et al. 2015a**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**); Tilarán cantón, La Tejona, N of Tilaran, 600–700 m, *Standley 45762 p.p.* (**Herzog 1951** as *Cololejeunea scabriflora*; **Morales 1991**; **Dauphin 2005**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-185* (hb. Lücking, **Lücking 1995, 1997**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**); Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48775a* (**Morales 1991**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48775a* (**Herzog 1951** as *Cololejeunea scabriflora*; **Dauphin 2005**). PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Morales 1991; Eggers 2001); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde, 15 Jan 1965, *James, W. 41a* (R, **Reed and Robinson 1971** as *Cololejeunea scabriflora*; **Dauphin 2005**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Lücking 1995). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 4*, *37*, *38* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon 0–1, 20–170 m, *Dauphin 3186* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Shannon 0–5, 20–170 m, *Dauphin 3077*, *3878* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Shannon 4, 9°09′N, 79°51′W, 2003, *Dauphin & Moser 3128* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3077*, *3078* (PMA, **Dauphin et al. 2022**). VERAGUAS: Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Playa Hermosa, subiendo a la falla y tomando hacia playa Santa Clara, 7°30′03.0′N, 81°52′26.9″W, 1995–1996, *Aranda 2518* (MA, PMA, **Salazar Allen and Chung 1997a**); Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30797* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30804*, *30832*, *30833/C* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Northwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea panamensis G.Dauphin et Pócs, *Trop. Bryol.* 27: 76, 2006 (Dauphin et al. 2006). Holotype: Panama, Panama West, Barro Colorado I., 9°09′N, 79°51′W, Barbour Point, 28 Feb 2003, *Dauphin s.n.* (PMA-10103, isotype EGR).

PANAMA. S. loc. (von Konrat et al. 2010; Sierra et al. 2018a). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 2003, *Dauphin s.n.* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20 m, 27 Feb 1999, *Dauphin* (PMA, EGR, **TYPE, Dauphin et al. 2006**; **Pócs et al. 2014**).

Also reported from Brazil.

Cololejeunea papilliloba (Steph.) Steph., *Hedwigia* 34(5): 250, 1895 (Stephani 1895c).

≡*Lejeunea papilliloba* Steph., *Hedwigia* 29(2): 73, 1890 (Stephani 1890c). Type: Brazil.

=*Cololejeunea pustulosa* Jovet-Ast, *Rev. Bryol. Lichénol.* 29(1/2): 35, 1960 (Jovet-Ast 1960), syn. fide Pócs and Bernecker (2009). Type: Mexico.

=*Aphanolejeunea pustulosa* (Jovet-Ast) Bern.-Lück. et Pócs, *Bryologist* 102(4): 749, 1999 (Equihua and Pócs 1999).

COSTA RICA. S. loc. (Schäfer-Verwimp and Van Melick 2016). PUNTARENAS: Monteverde cantón, Cordillera de Tilarán, Refugio Monteverde, ~1,600 m, 6 Feb 1985, *Eggers CR 5/299* (**Eggers et al. 2001** as *Aphanolejeunea pustulosa*); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea pustulosa*).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016). CHIRIQUÍ: Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W,

1,360–1,620 m, *Schäfer-Verwimp & Verwimp 34351/D*, *34356*, *34398/C*, *etc.* (JE, **Schäfer-Verwimp 2014**).

Also reported from West-Central Tropical Africa, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea papillosa (K.I.Goebel) Mizut., *J. Hattori Bot. Lab.* 29: 156, 1966 (Mizutani 1966).

≡*Physocolea papillosa* K.I.Goebel, *Ann. Jard. Bot. Buitenzorg* 39: 41, 1928 (Goebel 1928). Type: Sumatra.

=*Aphanolejeunea angustissima* Steph. *Sp. Hepat. (Stephani)* 5: 859, 1916 (Stephani 1916a), nom. rejic. prop., syn. fide Pócs and Bernecker (2009). Lectotype (Bonner 1962a: 235; see also Pócs and Bernecker 2009 as "holotype"): Guatemala, Cobán, *Türckheim* ex hb. Levier 5826 (G-00067015 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113712&lang=en, isolectotype JE-04001106 https://je.jacq.org/JE04001106). Note: Before 2009 this name was mainly used in the sense of *Cololejeunea gracilis* (cf. Söderström et al. 2022b). Thus, many of the reports below probably refer to the latter taxon.

=*Aphanolejeunea cyathiphylla* Herzog, *Svensk Bot. Tidskr.* 46(1): 105, 1952 (Herzog 1952), syn. fide Pócs and Bernecker (2009). Type: Ecuador.

GUATEMALA. S. loc. (Arnell 1959 as *Aphanolejeunea angustissima*; Jovet-Ast 1960 as *Aphanolejeunea angustissima*; Eggers et al. 2004 as *Aphanolejeunea angustissima*). ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim*, hb. Levier 5826 (G-00069375 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115764&lang=en, **TYPE** of *Aphanolejeunea angustissima*, **Stephani 1916a** as *Aphanolejeunea angustissima*; **Fulford and Sharp 1990** as *Aphanolejeunea angustissima*); Cobán, 1,350 m, 1907, *Türckheim*, hb. Levier 5826 (G, FI, **Bonner 1962a** as *Aphanolejeunea angustissima*).

?BELIZE. ?CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers & Timm BEZ 3/17* (**Eggers et al. 2004** as *Aphanolejeunea angustissima*); Mountain Pine Ridge, Cave Rio Frio, ~600 m, 1996, *Eggers & Timm BEZ 2/43* (**Eggers et al. 2004** as *Aphanolejeunea angustissima*). Note: Probably used in the sense of *Cololejeunea gracilis*.

?HONDURAS. S. loc. (Eggers et al. 2004 as *Aphanolejeunea angustissima*). ?ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56755* (JE, US, **Herzog 1951** as *Aphanolejeunea angustissima*). Note: Possibly used in the sense of *Cololejeunea gracilis*.

EL SALVADOR. S. loc. (Pócs 1984c as *Aphanolejeunea cyathiphylla*; Schäfer-Verwimp 1999 as *Aphanolejeunea angustissima* and *Aphanolejeunea cyathiphylla*; **Eggers et al. 2004** as *Aphanolejeunea angustissima*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/6/b/4* (**Winkler 1967** as *Aphanolejeunea cyathiphylla*).

?COSTA RICA. S. loc. (Schäfer-Verwimp 1999 as *Aphanolejeunea angustissima*; Eggers et al. 2004 as *Aphanolejeunea angustissima*). ?ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*). ?CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Eggers 2001 as *Aphanolejeunea angustissima*); Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*); Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*); Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/28* (**Eggers et al. 2001** as *Aphanolejeunea angustissima*). ?GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*). ?HEREDIA: Barva cantón, between Montana and Volcán Barva, 2,000 m, 1 Feb 1982, *Eggers CR 1/208*, det. Pócs (EGR, **Eggers et al. 2001** as *Aphanolejeunea angustissima*); Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50500* (Pócs 1984c as *Aphanolejeunea angustissima*); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*). ?LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Aphanolejeunea angustissima*). ?PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*). ?SAN JOSÉ: Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea angustissima*). Note: All reports probably represent *Cololejeunea gracilis*.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,500–1,650 m, *Schäfer-Verwimp & Verwimp 34420*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,300–1,700 m, *Schäfer-Verwimp & Verwimp 34445/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34572*, *34575/C* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30806 p.p.* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995, 1999, both as *Aphanolejeunea angustissima*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 462*, *614* (ULM, **Bernecker-Lücking 2000** as *Aphanolejeunea cyathiphylla*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 501* (hb. Bernecker, **Bernecker-Lücking 2000** as *Aphanolejeunea cyathiphylla*); S. loc. (Dauphin 1995 as *Aphanolejeunea cyathiphylla*); Yglesias D, 250–350 m, Apr 1992, *Lücking 621* (USJ, **Bernecker-Lücking 2000** as *Aphanolejeunea cyathiphylla*).

Also reported from Indo-China, Malesia, Papuasia, Australia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea planissima (Mitt.) Abeyw., *Ceylon J. Sci., Biol. Sci.* 2(1): 73, 1959 (Abeywickrama 1959) var. ***planissima***.

≡*Lejeunea planissima* Mitt., *J. Proc. Linn. Soc., Bot.* 5(18): 117, 1861 (Mitten 1860a). Type: Sri Lanka.

=*Leptocolea planifolia* A.Evans, *Bull. Torrey Bot. Club* 38(6): 265, 1911 (Evans 1911b), syn. fide Pócs et al. (2015a). Type: Puerto Rico.

≡*Cololejeunea planifolia* (A.Evans) R.M.Schust., *Beih. Nova Hedwigia* 9: 177, 1963 (Schuster 1963b).

?HONDURAS. S. loc. (Pagán 1939b as *Leptocolea planifolia*). Note: We are not aware of any firsthand report from Honduras.

PANAMA. S. loc. (Schäfer-Verwimp et al. 2013 as *Cololejeunea planifolia*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Camino F. Miller, 9°09′N, 79°51′W, 20–170 m, *Salazar Allen & Chung 4530* (PMA, **Stotler et al. 1998** as *Cololejeunea planifolia*); La Chorrera distrito, Barro Colorado Island, Caminos Armour, Wheeler and Zetek, 9°09′N, 79°51′W, 20–170 m, *Marino 14*, *17*, *24*, *29 p.p.* (PMA, **Stotler et al. 1998** as *Cololejeunea planifolia*); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992** as *Cololejeunea planifolia*).

Also reported from East Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Northwestern Pacific, Northeastern Pacific(?), Mexico, the Caribbean, Northern South America, Western South America.

Cololejeunea platyneura (Spruce) A.Evans, *Mem. Torrey Bot. Club* 8(2): 172, 1902 (Evans 1902b).

≡*Lejeunea platyneura* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 299, 1884 (Spruce 1884). Type: Brazil.

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Parque Nacional Pico Bonito, desde la quebrada Zacate al límite zona núcleo punto 54, 15°40′N, 86°55′W, 200–400 m, 29 Dec 2001, *Dauphin & Ferrufino 3050.6*, det. Dauphin Dec 2020 (CR-5152104!, **this publication**).

PANAMA. S. loc. (Pócs 2021). *COLÓN: Colón distrito, Quebrada Bonita, 15 Dec 1934, *Dodge et al. 17016*, det. Dauphin Jun 2017 (MO-5243761!, **this publication**); Colón distrito, Quebrada Bonita, 15 Dec 1934, *Dodge et al. 17019*, det. Dauphin Jun 2017 (MO-5243762!, **this publication**). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 150* (PMA, **Dauphin 2007**).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Indo-China, Malesia, Northern South America, Western South America, Brazil.

Cololejeunea schusteri Pócs, *Acta Bot. Hung.* 44(3/4): 376, 2002 (Pócs 2002). Type: Brazil.

PANAMA. S. loc. (Sierra et al. 2018a). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–190 m, *Dauphin 3153*, det. Pócs (EGR!, PMA-11282!, **Dauphin et al. 2006**; **Pócs 2021**; **Dauphin et al. 2022**).

Also reported from Northern South America, Brazil.

Cololejeunea setiloba A.Evans, *Bryologist* 16(4): 51, 1913 (Evans 1913). Type: USA, Florida.

COSTA RICA. S. loc. (Costa et al. 2020). HEREDIA: Sarapiquí cantón, Puerto Viejo (Caribbean lowlands), bank of the river Sarapiquí, ~1,600 m, 30 Jan 1985, *Eggers CR 2/47* (**Eggers et al. 2001**); Sarapiquí cantón, Puerto Viejo, 100 m, *Eggers*, det. Pócs (hb. Eggers, **Eggers 2001**).

Also reported from Southeastern USA, Brazil.

Cololejeunea sicifolia subsp. ***jamaicensis*** (R.M.Schust.) Bernecker et Pócs, *Polish Bot. J.* 54(1): 8, 2009 (Pócs and Bernecker 2009).

≡*Aphanolejeunea jamaicensis* R.M.Schust., *Phytologia* 45(5): 434, 1980 (Schuster 1980b). Type: Jamaica.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,640 m, *Schäfer-Verwimp & Verwimp 34417/D* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30765* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30743/A*, det. *30743* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America.

Cololejeunea sicifolia (Gottsche ex A.Evans) Pócs et Bernecker, *Polish Bot. J.* 54(1): 8, 2009 (Pócs and Bernecker 2009) subsp. ***sicifolia***.

≡*Aphanolejeunea sicifolia* Gottsche ex A.Evans, *Bull. Torrey Bot. Club* 38(6): 277, 1911 (Evans 1911b). Type: Puerto Rico.

GUATEMALA. ALTA VERAPAZ: Cobán municipio, Sierra Yalijux, 2,300 m, 1992, *Lenz 1992 (=GUA 1/8)*, det. Eggers (GUA, **Eggers et al. 2004** as *Aphanolejeunea* '*sicaefolia*'; **Freire 2006** as *Aphanolejeunea* '*sicaefolia*'; **Pérez 2009** as *Aphanolejeunea* '*sicaefolia*'). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Aphanolejeunea* '*sicaefolia*'). HUEHUETENANGO: S. loc., *Pérez 1415* (USCG, Pérez 2009 as *Aphanolejeunea* '*sicaefolia*').

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Aphanolejeunea* '*sicaefolia*').

COSTA RICA. S. loc. (Schäfer-Verwimp 1999 as *Aphanolejeunea* '*sicaefolia*'). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, 600 m, *Morales 2259*, det. Morales (USJ, **Morales 1991** as *Aphanolejeunea* '*sicaefolia*'; **Dauphin 2005** as *Aphanolejeunea* '*sicaefolia*').

PANAMA. S. loc. (Stotler et al. 1998 as *Aphanolejeunea sicifolia*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Caminos Armour, Wheeler and Zetek, 9°09′N, 79°51′W, 20–170, *Marino 14*, *15*, *16*, *etc.* (PMA, **Stotler et al. 1998** as

Aphanolejeunea sicifolia; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992** as *Aphanolejeunea* '*sicaefolia*').

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin A-8* (USJ, **Dauphin 1995** as *Aphanolejeunea sicifolia*, **1999** as *Aphanolejeunea sicifolia*, **2005** as *Aphanolejeunea sicifolia*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 307* (hb. Bernecker, **Bernecker-Lücking 2000** as *Aphanolejeunea sicifolia*).

Also reported from Southeastern USA(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea sintenisii (Steph.) Pócs, *Cryptog. Bryol.* 29(3): 235, 2008 (Dauphin et al. 2008).

≡*Aphanolejeunea sintenisii* Steph., *Sp. Hepat. (Stephani)* 5: 861, 1916 (Stephani 1916a). Type: Puerto Rico [≡*Cololejeunea sintenisii* Steph. 1888, nom. inval.].

=*Aphanolejeunea ephemeroides* R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 71(1): 130, 1955 (Schuster 1955a), syn. fide Dauphin et al. (2008). Type: USA, Florida.

BELIZE. S. loc. (Schäfer-Verwimp and Reiner-Drehwald 2009). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/22* (hb. Eggers, **O'Shea et al. 1997** as *Aphanolejeunea ephemeroides*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009; Schäfer-Verwimp and Van Melick 2016). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea ephemeroides*). HEREDIA: Barva cantón, Montana de la Barva, 2,000 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea ephemeroides*); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea ephemeroides*); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001** as *Aphanolejeunea ephemeroides*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-264*, *92-358*, *92-359*, *etc.* (hb. Lücking, USJ, **Gradstein et al. 1994** as *Aphanolejeunea ephemeroides*; **Lücking 1995** as *Aphanolejeunea ephemeroides*; Eggers 2001 as *Aphanolejeunea ephemeroides*; **Dauphin 2005** as *Aphanolejeunea ephemeroides*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea ephemeroides*). PUNTARENAS: Coto Brus cantón, San Vito, Fila Cruces, 1 Jan 1979, *Kalb 706*, det. Pócs (EGR!, **this publication**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Aphanolejeunea ephemeroides*); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea ephemeroides*). SAN JOSÉ: Dota cantón, San Gerardo, "Los Robles," 2,180 m, 28 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0470/B* (**Lüth and Schäfer-Verwimp 2004** as *Aphanolejeunea sintenisii*); Dota cantón, San Gerardo, Los Robles, 2,180 m, *Schäfer-Verwimp & Holz SV/H-0470b* (**Dauphin 2005** as *Aphanolejeunea sintenisii*); Dota cantón, San Gerardo, Los Robles, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0473/C* (**Schäfer-Verwimp 2001** as *Aphanolejeunea sintenisii*); Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001** as *Aphanolejeunea ephemeroides*); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Aphanolejeunea ephemeroides*).

PANAMA. VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30833/C* (JE, **Schäfer-Verwimp 2014**).

Also reported from Macaronesia, Western Indian Ocean, China, Eastern Asia, Indo-China, Papuasia, Australia, Southwestern Pacific, Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil.

****Cololejeunea spathulata*** Jovet-Ast, *Rev. Bryol. Lichénol.* 29(1/2): 36, 1960 (Jovet-Ast 1960). Type: Mexico.

***COSTA RICA.** *LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, Jun 1982, *Lücking 92-138*, det. Pócs 2016 (EGR!, **this publication**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 460–480 m, Jun 1982, *Lücking 92-513*, det. Pócs 2016 (EGR!, **this publication**). *SAN JOSÉ: Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950–2,000 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0053*, det. G. Dauphin Oct 2020 (CR!, **this publication**).

Also reported from Mexico, the Caribbean.

Cololejeunea standleyi Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 172, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 7): Honduras, Atlántida, Lancetilla Valley near Tela, 20–600 m, 6 Dec 1927–20 Mar 1928, *Standley 54827* (JE-04003945 https://je.jacq.org/JE04003945, isolectotype US-00070986 http://n2t.net/ark:/65665/324192e64-4c6a-48a3-8438-70b81447882b).

≡*Leptocolea standleyi* Herzog ex Standl. *Field Museum Nat. Hist. Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description).

HONDURAS. S. loc. (Robinson 1964; Zhu and So 2001). ATLÁNTIDA: Tela municipio, Lancetilla Valley (**Geissler and Bischler 1985** as *Leptocolea standleyi*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54827* (**Bonner 1963b**; **Herzog 1951**; **Morales 2009**; **Pócs et al. 2014, TYPE**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Leptocolea standleyi*).

COSTA RICA. S. loc. (Cole 1982, 1983). ALAJUELA: San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Morales 2060* (USJ, **Morales 1991**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Morales 2063* (USJ, **Morales 1991**). CARTAGO: Paraíso cantón, Tapanti National Park, *Morales 2168* (USJ, **Morales 1991**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001**); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Garabito cantón,

Carara National Park, 30 m, 13 Sep 1991, *Dauphin & Döbbeler* (USJ-47961, **Morales 2009**); Garabito cantón, Carara National Park, 30 m, *Dauphin & Döbbeler* (**Dauphin et al. 1998**; Eggers 2001; **Dauphin 2005**); Garabito cantón, Carara National Park, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, Gradstein et al. 2001a as *Cololejeunea* cf. *standleyi*); Quepos, 0–50 m, 7 Aug 1998, *Obando* (**Morales 2009**); S. loc., Mar 1997, *Alfaro* (USJ-59360, **Morales 2009**).

COCOS I. S. loc., 30 Jan 1997, *Sánchez* (USJ-60315, **Morales 2009**).

Not found outside Central America.

Cololejeunea subcardiocarpa Tixier, *Bradea* 3(6): 39, 1980 (Tixier 1980). Type: French Guiana.

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,300–1,700 m, *Schäfer-Verwimp & Verwimp 34401/A* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34763* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34175/A* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30829/A p.p.* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea submarginata Tixier, *Bradea* 3(6): 40, 1980 (Tixier 1980). Type: Guadeloupe.

GUATEMALA. EL PETÉN: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

COSTA RICA. S. loc. (**Gradstein 1993**). HEREDIA: Barva cantón, Bosque de la Hoja, 10°03′N, 84°07′W, 1,400–1,500 m, Jun 1989, *Menjivar & Morales 2259*, det. Grolle (USJ, MO-5624274, **Dauphin 2005**; **Morales 1991**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,360 m, *Schäfer-Verwimp & Verwimp 34351/A*, *34357*, *34377/A*, *34453/B* (JE, EGR, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34117/A* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, Armour 27, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3091 p.p.* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Bahía al E de Gross 5, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3147 p.p.*, *3178* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3166*, *3170* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Bay East from Gross 5, 2003, *Dauphin 3177 p.p.*, *3178* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lathrop 3, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3098*, *3099* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3091 p.p.* (PMA, **Dauphin et al. 2022**).

COCOS I. S. loc. (Dauphin 1999); Presidio, 100–200 m, Apr 1992, *Lücking 275*, *450*, *652*, *653* (USJ, ULM, **Bernecker-Lücking 2000**); Yglesias A, 50–100 m, Apr 1992, *Lücking 273*, *274*, *681*, *685* (USJ, ULM, **Bernecker-Lücking 2000**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea subscariosa (Spruce) Pócs, *Acta Bot. Hung.* 56(1/2): 197, 2014 (Pócs et al. 2014).

≡*Lejeunea subscariosa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 300, 1884 (Spruce 1884). Type: Brazil.

≡*Physocolea subscariosa* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 884, 1916 (Stephani 1916a).

=*Leptocolea manaosensis* Herzog, *Hedwigia* 71(6): 349, 1931 (Herzog 1931), syn. fide Pócs et al. (2014). Type: Brazil.

≡*Cololejeunea manaosensis* (Herzog) Herzog, *Rev. Bryol. Lichénol.* 20(6): 174, 1951 (Herzog 1931).

GUATEMALA. EL PETÉN: Flores municipio, Tikal, near the Maya ruins, 150 m, 4 Mar 1996, *Eggers GUA 2/15*, *Lenz GUA 2/2* (**Eggers et al. 2001** as *Cololejeunea manaosensis*).

COSTA RICA. S. loc. (Stephani 1916a as *Physocolea subscariosa*). CARTAGO: Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz 3077d*, *3077e*, *3077g* (**Morales 2009**). PUNTARENAS: Buenos Aires cantón, Boruca Reserve, Ceibón stream, 80 m, 30 Nov 2004, *Chaves P81* (USJ-60557, **Morales 2009**); Osa cantón, Mogos Region, 18 Feb 1992, *Sánchez* (USJ-59642, **Morales 2009**); Osa cantón, Osa Peninsula, 0–100 m, 30–31 Oct 1993, *Dauphin* (USJ-48100, **Morales 2009**); Osa cantón, Sierpe River, 10 m, Sep 2005, *Obando* (USJ-60558, **Morales 2009**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Cololejeunea subsphaeroidea (R.M.Schust.) Pócs, *Cryptog. Bryol.* 29(3): 235, 2008 (Dauphin et al. 2008).

≡*Aphanolejeunea subsphaeroidea* R.M.Schust., *Phytologia* 39(6): 431, 1978 (Schuster 1978b). Type: Venezuela.

PANAMA. S. loc. (Pócs 2021). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,450 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30889*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea surinamensis Tixier, *Bradea* 3(6): 42, 1980 (Tixier 1980). Type: Suriname.

COSTA RICA. SAN JOSÉ: Acosta cantón, El Cornelio, 1,350 m, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Gradstein & Salazar Allen 15141 p.p.* (PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado Island, Armour 27, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3091 p.p.* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Bahía al E de Gross 5, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3166 p.p.*, *3178* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3166*, *3170* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Bay East from Gross 5, 2003, *Dauphin 3177*, *3178* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller, 9°09′N, 79°51′W, 20–170, *Salazar Allen & Chung 4530* (PMA, Dauphin et al. 2006, **2022**); La Chorrera distrito, Barro Colorado Island, Caminos Armour, Wheeler and Zetek, 9°09′N, 79°51′W, 20–170, *Marino 14*, *17*, *24*, *29* (PMA, Dauphin et al. 2006, **2022**); La Chorrera distrito, Barro Colorado Island, Lathrop 3, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3098* (PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3091* (PMA, **Dauphin et al. 2022**).

Also reported from Northern South America, Western South America, Brazil.

Cololejeunea tamasii Schäf.-Verw., *Phytotaxa* 60: 9, 2012 (Schäfer-Verwimp 2012). Holotype: Panama, Chiriquí, Cordillera de Talamanca, Boquete, Ostseite des Vulkan Barú, Regenwald entlang der Erdstraße zum Sendero Los Quetzales, epiphyll, 1,880 m, 8°51.0′N, 82°29.9′W, 7 Apr 2010, *Schäfer-Verwimp & Verwimp 30992* (JE; isotype EGR).

PANAMA. CHIRIQUÍ: Boquete distrito, Cordillera de Talamanca, Vulkan Barú National Park, Sendero Los Quetzales, 8°51.0′N, 82°29.9′W, 1,880 m, 7 Apr 2010, *Schäfer-Verwimp & Verwimp 30992* (JE, EGR, **TYPE, Schäfer-Verwimp 2012; Pócs et al. 2014; Söderström et al. 2014**); Boquete distrito, La culebra trail to the hidden water fall, 800 m, 29 Jan 2016, *López & Testo 806* (PMA, INPA, **Sierra and Dauphin 2016**).

Not found outside Central America.

Cololejeunea verwimpii Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 230, 1995 (Tixier 1995). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez* (USCG, **Barillas de Klee et al. 2008**). IZABAL: S. loc., 2007, *Pérez* (USCG, **Barillas de Klee et al. 2008**).

PANAMA. S. loc. (Gradstein and Costa 2003). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, *Zatek* (F, **Tixier 1991**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3153 p.p.*, det. Pócs (EGR!, PMA!, **this publication**); La Chorrera distrito, Barro Colorado Island, Shannon 7, *Gradstein & Salazar Allen 15123* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Zetek (F, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Barbour Point, 2003, *Dauphin 3153 p.p.* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Fuertes Cove, 2003, *Dauphin 3110* (CR, PMA, **Dauphin et al. 2022**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea vitaliana Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 230, 1995 (Tixier 1995). Type: Brazil.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b** as *Cololejeunea* '*vitalana*'); S. loc. (Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014; Gradstein 2021); S. loc., *Schäfer-Verwimp & Holz SV/H-0473/A* (GOET, **Wilson et al. 2007; Gradstein et al. 2011; Heinrichs et al. 2012c; Yu et al. 2013**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo, "Los Robles" trail, 2,330 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0473/A*, det. Pócs (GOET, CR EGR, hb. Schäfer-Verwimp, MO-5915784, **Holz et al. 2001**; **Gradstein et al. 2006b**; **Dong et al. 2012, 2013**; **Heinrichs et al. 2012a, 2014a, 2014b**; **Czumay et al. 2013**; **Feldberg et al. 2014**; **Renner and de Lange 2020**); Dota cantón, San Gerardo, Los Robles, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0473/C* (**Schäfer-Verwimp 2001**); Dota cantón, Savegre, 5 Mar 2003, *Eggers*, det. Pócs (EGR!, **this publication**); Pérez Zeledón cantón, Rio Savegre, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0053/A*, det. Pócs (EGR!, **this publication**); Trogon Lodge, Sendero Candelita, 2,400 m, 7 Nov 1999, *Holz CR 99-581* (GOET, **Holz et al. 2001; Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,450 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30891*, det. Pócs (JE, EGR, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34147/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, Western South America, Brazil.

Cololejeunea winkleri (M.I.Morales et A.Lücking) Pócs, *Mem. New York Bot. Gard.* 76(4): 78, 2009 (Gradstein and Ilkiu-Borges 2009).

≡*Aphanolejeunea winkleri* M.I.Morales et A.Lücking, *Nova Hedwigia* 60(1/2): 120, 1995 (Morales and Lücking 1995). Holotype: Costa Rica, Heredia, Sarapiquí, Finca La Selva, ~50 m, tropical lowland rainforest zone, trail between administration office and Casa Holdridge, on fern leaves, Jun 1991, *Morales, Dauphin & Umaña 2361* (USJ 40919).

COSTA RICA. S. loc. (Pócs and Lücking 1996, 1997, both as *Aphanolejeunea winkleri*; Ilkiu-Borges 2000 as *Aphanolejeunea winkleri*; Gradstein and Costa 2003 as *Aphanolejeunea winkleri*; Zartman and Ilkiu-Borges 2007 as *Aphanolejeunea winkleri*; Pócs and Bernecker 2009; Schäfer-Verwimp et al. 2013; Sierra et al. 2019b; Gradstein 2021). HEREDIA: Sarapiquí cantón, Finca La Selva, 10°26′N, 84°03′W, 50 m, 18 Jan 1993, *Morales et al. 2361* (USJ-40919, **TYPE** of *Aphanolejeunea winkleri*, **Lücking 1995** as *Aphanolejeunea winkleri*; **Morales and Lücking 1995** as *Aphanolejeunea winkleri*; **Crosby and Engel 2006** as *Aphanolejeunea winkleri*; **Pócs et al. 2014**); Sarapiquí cantón, Finca La Selva, Sarapiquí, Jun 1991, *Vargas 2287* (USJ-34948, **Morales and Lücking 1995** as *Aphanolejeunea winkleri*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-175*, *92-176*, *92-373*, *92-545*, *92-604*, *94-10*, *94-24* (hb. Lücking, **Lücking 1995** as *Aphanolejeunea winkleri*; **Morales and Lücking 1995** as *Aphanolejeunea winkleri*; **Dauphin 2005** as *Aphanolejeunea winkleri*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Aphanolejeunea winkleri*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Aphanolejeunea winkleri*).

Also reported from Northern South America, Western South America, Brazil.

Cololejeunea yelitzae Pócs et Bernecker, *Acta Bot. Hung.* 55(3/4): 386, 2013 (Pócs and Bernecker 2013). Type: Venezuela.

COSTA RICA. S. loc. (Pócs et al. 2022). *LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, Dec 1991, *Lücking 91-120*, det. Pócs (EGR!, **this publication**). PUNTARENAS: Coto Brus cantón, Fila Cruces, 8°57′00″N, 83°04′20″W, 1,400 m, 4 Jun 1995, *Dauphin & Chacón 1777A*, det. G. Dauphin & T. Pócs (CR!, **this publication**). SAN JOSÉ: Cordillera de Talamanca, "Genesis II" Cloud Forest Reserve, 2,300 m, Feb 1997, *Lücking*, det. Pócs 2013 (EGR, ULM, **Pócs and Bernecker 2013**); Dota cantón, San Gerardo, 1,905 m, *Schäfer-Verwimp & Holz SV/H-0049/F*, det. Pócs (EGR!, hb. Schäfer-Verwimp, **Pócs and Bernecker 2013**); Dota cantón, San Gerardo, 10 Nov 1993, *Carranza*, det. Pócs 2013 (EGR!, **Pócs and Bernecker 2013**); Pérez Zeledón cantón, Rio Savegre, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0053/A*, det. Pócs (EGR!, **Pócs and Bernecker 2013**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30984* (JE, EGR, **Pócs and Bernecker 2013**; **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,450 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30890* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,680 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30937*, *30940*, det. A. Schäfer-Verwimp (JE, EGR, hb. Schäfer-Verwimp, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,500–1,570 m, *Schäfer-Verwimp & Verwimp 34398/A*, *34453/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34710* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34578*, *34594/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.67′N, 82°42.85′W, 1,220 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34701* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30805* (JE, EGR, **Pócs and Bernecker 2013**; **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30828* (JE, EGR, **Pócs and Bernecker 2013**; **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Colura (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 12, 1835 (Dumortier 1835).

Colura cylindrica Herzog, *Svensk Bot. Tidskr.* 46(1): 106, 1952 (Herzog 1952). Type: Ecuador.

***NICARAGUA.** *CHONTALES: Cuapa municipio, N of Cuapa, Cerro El Parlamento, E peak, 12°18′40″N, 85°21′27″W, 840 m, 3 Dec 2012, *Magill 14419*, det. Atwood 2013 (MO-6493069! https://tropicos.org/specimen/102847622, HULE http://tropicos.org/specimen/100608069, **this publication**).

PANAMA. *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Ramírez-Román PA 19*, det. Ramírez-Román Aug 2017 (PMA, **this publication**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30758* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34156*, *34160/C*, *34175/D* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Jefe, 9°13.4–5′N, 79°22.7–9′W, 956 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30741* (JE, **Heinrichs et al. 2012a**; **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34330/A* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30803/B*, *30825*, *30863* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 356* (ULM, **Bernecker-Lücking 2000**); Yglesias

A, 50–100 m, Apr 1992, *Lücking 354* (USJ, hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from East Tropical Africa, the Caribbean, Northern South America, Western South America, Brazil.

Colura greig-smithii Jovet-Ast, *Rev. Bryol. Lichénol.* 22(2/3): 293, 1954 (Jovet-Ast 1953). Type: Trinidad.

COSTA RICA. S. loc. (Onraedt 1979; Dauphin 2005). LIMÓN: Pococí cantón, Guápiles, Finca Earth, *Eggers & Eggers CR 14/10* (**Dauphin 2005**); Pococí cantón, Guápiles, Territory of the "Earth University," ~50 m, 2003, *Eggers & Eggers CR 14/10* (**Eggers et al. 2004**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48775a* (**Jovet-Ast 1954**).

***PANAMA.** *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Zevallos 317*, det. Zevallos Aug 2017 (PMA, **this publication**).

COCOS I. Presidio, 100–200 m, Apr 1992, *Lücking 358* (USJ, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 361* (hb. Bernecker, **Bernecker-Lücking 2000**); Yglesias A, 50–100 m, Apr 1992, *Lücking 360* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Colura naumannii (Schiffn.) Steph., *Sp. Hepat. (Stephani)* 5: 935, 1916 (Stephani 1916a).

≡*Colurolejeunea naumannii* Schiffn., *Hepat. (Engl.-Prantl)*: 121, 1893 (Schiffner 1893a). Type: Chile.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein and Holz 2005; Schäfer-Verwimp et al. 2013; Gradstein 2021). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,400 m, *Holz & Schäfer-Verwimp CR 99-1208*, *SV/H-0147/B*, *SV/H-0147/C* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Schäfer-Verwimp 2001**; **Dauphin 2005**).

Also reported from Northern South America, Western South America, Southern South America.

Colura rhynchophora Jovet-Ast, *Rev. Bryol. Lichénol.* 17(1/4): 27, 1949 (Jovet-Ast 1948). Type: Guadeloupe.

COSTA RICA. S. loc. (Schäfer-Verwimp and Van Melick 2016). PUNTARENAS: Monteverde cantón, Sendero Brillante, 1,600 m, *Eggers CR 5/346* (**Eggers et al. 2004**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Brazil.

Colura tenuicornis (A.Evans) Steph., *Sp. Hepat. (Stephani)* 5: 942, 1916 (Stephani 1916a), nom. cons. prop.

≡*Colurolejeunea tenuicornis* A.Evans, *Trans. Connecticut Acad. Arts* 10(8): 455, 1900 (Evans 1900a). Type: Hawaii.

=*Lejeunea ceratophora* Nees, *Syn. Hepat.* 3: 405, 1845 (Gottsche et al. 1845a), syn. fide Jovet-Ast (1953), nom. rej. prop. Type: Peru.

≡*Colura ceratophora* (Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 402, 1877 (Trevisan 1877), nom. rej. prop.

=*Colura tenuis* Steph. *Sp. Hepat. (Stephani)* 5: 942, 1916 (Stephani 1916a), syn. fide Miller (1963). Type: Hawaii.

GUATEMALA. ALTA VERAPAZ: Tucurú, *Pérez 195* (USCG, Pérez 2006, **2009**).

†**HONDURAS.** †ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Colura ceratophora*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54835*, *54841*, *56815* (B, JE, **Herzog 1951** as *Colura ceratophora*). Note: All reports from Honduras use Stephani's concept, and the reports were referred to *Colura ulei* by Jovet-Ast (1953).

EL SALVADOR. S. loc. (Lücking 1995). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,240 m, 23 May 1962, *Winkler A/5/4*, *A/10/4*, *B/4/d/3* (**Winkler 1967**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Jovet-Ast 1960; Arnell 1963; Cole 1982 as *Colura tenuis*, 1983; Miller et al. 1983; Fulford and Sharp 1990; Gradstein and Holz 2005). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-450*, *92-451* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48775a* (**Jovet-Ast 1953**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48676 p.p.*, *48775 p.p.* (**Herzog 1951** as *Colura ceratophora*, probably using Stephani's concept, and the report should be referred to *Colura ulei*; cf. Jovet-Ast 1953). PUNTARENAS: Monteverde, <1,500 m (Eggers 2001; Morales 1991); Monteverde, 15 Jan 1965, *James, W. 40f* (R, MO-6163062, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30912 p.p.*, *30912* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34621* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30745 p.p.*, *30745* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro

Gaital, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34231* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Jefe, 9°13.4–5′N, 79°22.7–9′W, 995 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30725* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Colura tortifolia (Nees et Mont.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 402, 1877 (Trevisan 1877).

≡*Lejeunea tortifolia* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 265, 1843 (Montagne 1843). Type: Guyana.

BELIZE. S. loc. (Eggers et al. 1998, 2004). CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers BEZ 3/5* (**O'Shea et al. 1997**); Mountain Pine Ridge, Cave Rio Frio, 600 m, 1996, *Eggers BEZ 2/30* (**O'Shea et al. 1997**). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/10* (hb. Eggers, JE, **O'Shea et al. 1997**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Parque Nacional Pico Bonito, desde la quebrada Zacate al límite zona núcleo punto 54, 15°40′N, 86°55′W, 200–400 m, 29 Dec 2001, *Dauphin & Ferrufino 3050.4*, det. Dauphin Dec 2020 (CR-5152105!, **this publication**).

COSTA RICA. S. loc. (Eggers et al. 1998; Ilkiu-Borges 2000; **Lücking et al. 2010**). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3346* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-79* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuga Lodge near Tortuguero, 21 Feb 1985, *Eggers CR 12/82* (**Eggers 2001**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Lower Road, Rincon de Osa, 11 Mar 1965, *Richards* (**Jovet-Ast 1976**); Osa cantón, Península de Osa, Boscosa, 150 m, *Gradstein & Dauphin 9303a* (U, USJ, **Gradstein et al. 1994**); Osa cantón, Rincón de Osa, *Richards 1*, *3* (**Morales 1991**; **Eggers 2001**; **Dauphin 2005**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Lücking 1995; Eggers et al. 1998; Ilkiu-Borges 2000). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Cox 111*, det. Cox Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Salt Creek, Long Beach Trail, Aug 2017, *Dauphin et al. 4629* (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 2,050 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31017* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30767* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 709 p.p.*, *710 p.p.*, *715*, *775*, *833*, *838* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Caminos Armour, Wheeler and Zetek, 9°09′N, 79°51′W, *Marino 18*, *33* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3079* (**Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30803/A* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 352*, *353* (USJ, **Bernecker-Lücking 2000**); S. loc. (Dauphin 1995, 1999).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Colura ulei Jovet-Ast, *Rev. Bryol. Lichénol.* 22(2/3): 270, 1954 (Jovet-Ast 1953). Type: Brazil.

=*Colura ceratophora* sensu Steph., *Spec. Hepat. (Stephani)* 5: 931, 1916 (Stephani 1916a), non *Colura ceratophora* (Nees) Trevisan [=*Colura tenuicornis*], syn. fide Jovet-Ast (1953).

HONDURAS. S. loc. (Bonner 1963b). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54835*, *54841*, *56815*, *56902* (B, JE-04004023, US, **Jovet-Ast 1953**).

COSTA RICA. S. loc. (Bonner 1963b; Cole 1982, 1983). LIMÓN: Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48676 p.p.*, *48755 p.p.* (JE, **Jovet-Ast 1953**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); S. loc. (**Merwin et al. 2001**).

Also reported from Northern South America, Western South America, Brazil.

Colura verdoornii Herzog et Jovet-Ast, *Rev. Bryol. Lichénol.* 22(2/3): 288, 1954 (Jovet-Ast 1953). Type: Malaysia.

BELIZE. S. loc. (Eggers et al. 2004). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/19* (hb. Eggers, **O'Shea et al. 1997**).

COSTA RICA. S. loc. (Eggers et al. 2004). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-134*, *92-135*, *92-444*, *92-559* (hb. Lücking, **Lücking 1995**; **Dauphin et al. 1998**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuga Lodge near Tortuguero, 21 Feb 1985, *Eggers CR 12/82* (**Eggers 2001**; **Eggers et al. 2001**).

Also reported from Indian Subcontinent, Indo-China, Malesia, the Caribbean.

Cryptolophocolea L.Söderstr., Crand.-Stotl., Stotler et Váňa, *Phytotaxa*. 97(2): 39, 2013 (Söderström et al. 2013a).

Cryptolophocolea connata (Sw.) L.Söderstr. et Váňa, *Phytotaxa* 112(1): 19, 2013 (Söderström et al. 2013b).

≡*Jungermannia connata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

≡*Lophocolea connata* (Sw.) Nees ex Mont., *Ann. Sci. Nat., Bot.*, sér. 2, 12: 51, 1839 (Montagne 1839a).

≡*Chiloscyphus connatus* (Sw.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1985 (Engel and Schuster 1984).

=*Lophocolea granatensis* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5: 126, 1864 (Gottsche 1864), syn. fide Dauphin et al. (2018). Type: Colombia.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (**Pérez 2006** as *Lophocolea connata*).

HONDURAS. S. loc. (Fulford 1987 as *Lophocolea connata*; Fulford and Sharp 1990 as *Lophocolea connata*; Engel 2010 as *Lophocolea connata*); S. loc., *Standley 54621 p.p.* (F, **Fulford 1976** as *Lophocolea connata*).

COSTA RICA. Cordillera de Talamanca, *Kappelle 5474* (U, **Kappelle 1996** as *Lophocolea connata*). †CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Morales 161* (USJ, FLAS, Morales 1991 as *Lophocolea* cf. *granatensis*; Dauphin 2005 as *Lophocolea* cf. *granatensis*; Dauphin et al. 2018 as *Lophocolea granatensis*). Note: No specimen from Cartago was found by Dauphin et al. (2018), and they suggested that it should be rejected. PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, 1,550 m, *Dauphin 1356* (CR, **Dauphin 2005** as *Lophocolea connata*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Lophocolea connata*); Monteverde cantón, Santa Elena, Pacific slope, 10°20′N, 84°48′W, 26 Mar 1992, *Lyon 498*, det. Dauphin Jun 2017 (MO-4423822!, **this publication**); Monteverde, 1,550 m, *Gradstein & Solano 9404*, *9474*, *9579* (U, USJ, **Dauphin 2005** as *Lophocolea connata*; **Gradstein et al. 1994** as *Lophocolea connata*); Monteverde, *Gradstein 9404* (GOET, **Hentschel et al. 2006a**, **2006b**, **2007b**, all as *Chiloscyphus connatus*; **Feldberg et al. 2014**; **Patzak et al. 2016** as *Chiloscyphus connatus*; **Renner et al. 2017a** as *Chiloscyphus connatus*; **Bakalin et al. 2022b**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 615b p.p.*, *704 p.p.*, *724* (PMA, **Stotler et al. 1998** as *Lophocolea connata*). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4443 p.p.* (PMA, **Dauphin et al. 2015** as *Lophocolea connata*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cryptolophocolea guadalupensis (Steph.) L.Söderstr. et Váňa, *Phytotaxa* 112(1): 19, 2013 (Söderström et al. 2013b).

≡*Lophocolea guadalupensis* Steph., *Bull. Herb. Boissier*, sér. 2, 7(1): 65 (=*Spec. Hepat. [Stephani]* 3: 153), 1907 (Stephani 1907b). Type: Guadeloupe.

≡*Chiloscyphus guadalupensis* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 416, 1985 (Engel and Schuster 1984), "*guadeloupensis*."

=*Chiloscyphus obliquefolius* Herzog ex Fulford, *Mem. New York Bot. Gard.* 11(4): 448, 1976 (Fulford 1976), nom. inval. (ICN2018 Art. 36.1(c); publ. in syn. [sub *Lophocolea guadalupensis* Steph. 1907]), syn. fide Fulford (1976). Original material: Costa Rica, Cartago, Cerro de la Carpintera, 1,500–1,800 m, *Standley 35724* (JE-04010814 https://je.jacq.org/JE04010814).

GUATEMALA. ZACAPA: Sierra de Las Minas, *Steyermark 29995* (F, **Fulford 1976** as *Lophocolea guadalupensis*; **Freire 2006** as *Lophocolea* '*guadeloupensis*'; **Pérez 2009** as *Lophocolea* '*guadeloupensis*').

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Lophocolea* '*guadelupensis*'); S. loc., *Gradstein & Mues 9630* (GOET, **Hentschel et al. 2006b**, **2007b**, both as *Chiloscyphus guadalupensis*; **Patzak et al. 2016** as *Chiloscyphus guadalupensis*; **Bakalin et al. 2022a**). CARTAGO: La Union cantón, Cerro de La Carpintera, 1,500–1,800 m, *Standley 35724* (JE, **Fulford 1976** as *Lophocolea guadalupensis*; **Morales 1991** as *Lophocolea guadalupensis*, **Dauphin 2005** as *Lophocolea* '*guadeloupensis*').

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cryptolophocolea martiana (Nees) L.Söderstr., Crand.-Stotl. et Stotler, *Phytotaxa* 112(1): 20, 2013 (Söderström et al. 2013b) var. ***martiana***.

≡*Lophocolea martiana* Nees, *Syn. Hepat.* 2: 152, 1845 (Gottsche et al. 1845b). Type: Brazil.

≡*Lophocolea liebmanniana* var. *martiana* (Nees) Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931).

≡*Chiloscyphus martianus* (Nees) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 419, 1985 (Engel and Schuster 1984).

=*Lophocolea epiphylla* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 127, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Fulford (1976). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, on leaf, *Standley 55.669* (F fide Fulford 1976).

GUATEMALA. S. loc. (Oliveira-e-Silva and Yano 2000 as *Lophocolea martiana*); S. loc., 3,800 ft (1,158 m), *Türckheim* (NY Bryo. Levier 5084, M, **Fulford 1976** as *Lophocolea martiana*). ALTA VERAPAZ: Cobán municipio, near Cubilguitz, *Steyermark 44423* (F, **Fulford 1976** as *Lophocolea martiana*; **Freire 2006** as *Lophocolea martiana*; **Pérez 2009** as *Lophocolea martiana*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Lophocolea martiana*); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 374* (USCG, Pérez 2009 as *Lophocolea martiana*). BAJA VERAPAZ: Purhulhá municipio, Biotopo del Quetzal, 11 Sep 2004, *Pérez*, det. Pérez (MO-6233909!, **this publication**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 63*, *77*, *142*, *180*, *417*, *418*, *425*, *471*, *499*, *517* (USCG, **Freire et al. 2013** as *Chiloscyphus martianus*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Lophocolea martiana*). EL PROGRESO: Montaña Canahui, *Steyermark 43782* (F, NY, **Fulford 1976** as *Lophocolea martiana*). HUEHUETENANGO: S. loc., *Pérez 1446* (USCG, Pérez 2009 as *Lophocolea martiana*). IZABAL: S. loc., *Türckheim 5084* (NY, **Freire 2006** as *Lophocolea martiana*); trail Darmouth to Morales, *Steyermark 39144* (F, **Fulford 1976** as *Lophocolea martiana*). SACATEPÉQUEZ: S. loc., *Salvin* (NY, Pérez 2009 as *Lophocolea martiana*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Lophocolea martiana*).

BELIZE. CAYO: Monkey Tail Branch, 16°44′N, 88°56′W, 7 Dec 1996, *Allen 18036*, det. Whittemore 1997 (MO-4417197!, **this publication**); Monkey Tail Branch, 16°44′N, 88°56′W, 10 Dec 1996, *Allen 18265*, det. Whittemore (MO-4417007!, **this publication**); S. loc. (Whittemore and Allen 1996 as *Lophocolea martiana*); San Agustín, *Mains 3903*, *3904* (MICH, **Fulford 1976** as *Lophocolea martiana*); Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,140 m, 10 Dec 1993, *Allen 15345B*, det. Whittemore 1994 (BRH, MO-4421606, **Whittemore and Allen 1996** as *Lophocolea martiana*); Valentín, *Mains 3698* (MICH, **Fulford 1976** as *Lophocolea martiana*).

HONDURAS. S. loc. (Oliveira-e-Silva and Yano 2000 as *Lophocolea martiana*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Lophocolea liebmanniana* var. *martiana*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54563* (JE, **Herzog 1938** as *Lophocolea martiana*); Tela municipio, Lancetilla Valley, *Standley 55280* (F, **Fulford 1976** as *Lophocolea martiana*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55669* (F, **Herzog 1951** as *Lophocolea epiphylla*; **Fulford 1976** as *Lophocolea martiana*). *OLANCHO: Catacamas municipio, Sierra de Algalta, Montana Babilonia, 15 km NNW of Catacamas, 14°59′N, 85°56′W, 30 May 1992, *Allen 12551*, det. Whittemore 1993 (MO-3994176!, **this publication**). *YORO: Cordillera Nombre de Dios, N slope ridge between Rio Guan Guan and Quebrada Aguacatal, 15°30′N, 87°28′W, 5 Mar 1993, *Allen 13613*, det. Dauphin Jun 2017 (MO-5227631!, **this publication**).

NICARAGUA. S. loc. (Oliveira-e-Silva and Yano 2000 as *Lophocolea martiana*). *ATLÁNTICO NORTE: Bonanza municipio, from mine Plantel ~1 km NE, 14°02′N, 84°34–35′W, 14 Dec 1980, *Stevens 18801*, det. Whittemore 1990 (MO-3674636!, **this publication**). CHONTALES: La Libertad, 250–350 m, *Standley 9087* (F, **Fulford 1976** as *Lophocolea martiana*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Lophocolea martiana*; Oliveira-e-Silva and Yano 2000 as *Lophocolea martiana*); S. loc., *Brenes* (F, **Fulford 1976** as *Lophocolea martiana*; **Morales 1991** as *Lophocolea martiana*). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Lophocolea martiana*); Poás Volcano, Aug 1977, *Griffin et al. 21* (FLAS-020510, USJ, **Morales and Griffin 1983** as *Lophocolea martiana*; **Morales 1991** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*); San Ramón cantón, La Balsa, 10°11′N, 84°30′W, 29 Aug 1979, *Stevens 13715*, det. Whittemore Jul 1990 (MO-3674644!, **this publication**). *CARTAGO: La Sierra, 6 km NE of Empalme, 14 Jan 1983, *Gómez-Pignataro 19735*, det. Whittemore Jul 1990 (MO-3060501!, **this publication**). GUANACASTE: Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, 26 Sep 1990, *Chávez 83b*, det. Dauphin Jun 2017 (MO-6230262!, **this publication**); Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1903* (CR, **Dauphin 2005** as *Lophocolea martiana*). LIMÓN: Finca Montecristo, *Standley 48492* (**Morales 1991** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*); Pococí cantón, Río Toro Amarillo, 2 km W de Guápiles, *Woodruff*, det. Griffin (FLAS, **Morales 1991** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*); Siquirres cantón, Pinea Montecristo, on the Rio Reventazón, below Cairo, 25 m, *Standley 48492*, *48502*, *48533* (B-06380, **Herzog 1938** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*). PUNTARENAS: Monteverde (Morales 1991 as *Lophocolea martiana*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 87b* (R, **Reed and Robinson 1971** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 76* (R, MO-6163171, **Reed and Robinson 1971** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 77* (R, MO-6163170, **Reed and Robinson 1971** as *Lophocolea martiana*; **Dauphin 2005** as *Lophocolea martiana*).

PANAMA. DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Lophocolea martiana*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Lophocolea martiana*); Cerro Pirre, from Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9250* (PMA, **Stotler et al. 1998** as *Lophocolea martiana*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cryptolophocolea martiana (Nees) L.Söderstr. var. ***perissodonta*** (Spruce) Gradst., *Phytoneuron* 2015(22): 1, 2015 (Bernal et al. 2015).

≡*Lophocolea martiana* var. *perissodonta* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 432, 1885 (Spruce 1885). Type: Brazil.

≡*Lophocolea perissodonta* (Spruce) Steph., *Bull. Herb. Boissier*, sér. 2, 7(1): 63 [*Sp. Hepat. (Stephani)* 3: 151], 1907 (Stephani 1907b).

≡*Chiloscyphus perissodontus* (Spruce) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 421, 1985 (Engel and Schuster 1984).

≡*Cryptolophocolea perissodonta* (Spruce) L.Söderstr., *Phytotaxa* 112(1): 20, 2013 (Söderström et al. 2013b).

BELIZE. CAYO: Valentín, *Mains 3698* (MICH, **Fulford 1976** as *Lophocolea perissodonta*; Whittemore and Allen 1996 as *Lophocolea perissodonta*).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53489*, *54563* (JE, **Fulford 1976** as *Lophocolea perissodonta*); Tela municipio, San Alejo, *Standley 7620 7914 p.p.* (F, **Fulford 1976** as *Lophocolea perissodonta*). EL PARAÍSO: El Paraíso municipio, El Zamorano, *Standley 2343* (F, **Fulford 1976** as *Lophocolea perissodonta*).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, casco de hacienda, 4 Nov 2014, *Búcaro H347*, det. Dauphin 2016 (MHES!, **this publication**).

COSTA RICA. S. loc. (Cole 1982 as *Lophocolea perissodonta*, 1983 as *Lophocolea perissodonta*). LIMÓN: Siquirres cantón, Cairo, *Standley & Valerio 36876*, *48492*, *48502*, *48533* (JE, **Fulford 1976** as *Lophocolea perissodonta*; **Morales 1991** as *Lophocolea perissodonta*; **Dauphin 2005** as *Lophocolea perissodonta*); Siquirres cantón, La Colombiana, *Brenes 118* (F, **Fulford 1976** as *Lophocolea perissodonta*; **Morales 1991** as *Lophocolea perissodonta*; **Dauphin 2005** as *Lophocolea perissodonta*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Cryptomitrium Austin ex Underw., *Bull. Illinois State Lab. Nat. Hist.* 2(1): 36, 1884 (Underwood 1884).

Cryptomitrium tenerum (Hook.) Austin ex Underw., *Bull. Illinois State Lab. Nat. Hist.* 2(1): 36, 1884 (Underwood 1884).

≡*Marchantia tenera* Hook., *Syn. Pl. (Kunth)* 1: 45, 1822 (Kunth 1822). Type: Mexico.

GUATEMALA. S. loc. (Gradstein et al. 2001b; Bischler-Causse et al. 2005; Gradstein 2017b; Arrocha et al. 2020). QUETZALTENANGO: Between Quetzaltenango and San Felipe, near Santa María de Jesús, 13 Sep 1940, *Haupt* (**Haupt 1942**).

COSTA RICA. S. loc. (Mehra and Sokhi 1977; Cole 1984; Perold 1994; Gradstein et al. 2001b; Bischler-Causse et al. 2005; Gradstein 2017b; Arrocha et al. 2020). SAN JOSÉ: Escazú cantón, Escazú, Montañas de Escazú, mountains SW of village, 7–8 Jul 1940 (Dauphin 2005); Escazú cantón, Escazú, mountains SW of village, 17 Jul 1940, *Haupt* (**Haupt 1942**); Montañas de Escazú y Aserrí (**Morales 1991**).

PANAMA. CHIRIQUÍ: Boquerón distrito, Finca El Aguacatal, Parque Nacional Volcán Barú, 8°47′23.3′N, 82°34′29.8′W, 2,052 m, 4 Aug 2014, *Arrocha 2748* (UCH, **Arrocha et al. 2020**); Boquerón distrito, Finca El Aguacatal, Parque Nacional Volcán Barú, 8°47′23.3′N, 82°34′29.8′W, 2,052 m, 4 Aug 2014, *Arrocha 2996* (UCH, **Arrocha et al. 2020**); Boquerón distrito, Finca El Aguacatal, Parque Nacional Volcán Barú, 8°47′23.3′N, 82°34′29.8′W, 2,052 m, 4 Aug 2014, *Arrocha 2997* (UCH, **Arrocha et al. 2020**); Boquerón distrito, Finca El Aguacatal, Parque Nacional Volcán Barú, 8°47′23.3′N, 82°34′29.8′W, 2,052 m, 4 Aug 2014, *Arrocha 2998* (UCH, **Arrocha et al. 2020**).

Also reported from Eastern Asia, Indian Subcontinent, Southwestern USA, Mexico, Southern South America.

Cyathodium Kunze, *Nov. Stirp. Pug.* 6: 17, 1834 (Lehmann 1834).

Cyathodium bischlerianum N.Salazar, *Bryologist* 104(1): 141, 2001 (Salazar Allen 2001a). Holotype: Panama. Parque Nacional Soberanía, Río Pedro Miguel, Camino de Cruces (9°01′N, 79°36′W), on rocky banks of river, *Salazar Allen, Chung & Rivera 14390* (PMA).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Rio Las Mozas, *Salazar Allen et al. 14447* (PMA, **Bischler-Causse et al. 2005**; **Salazar Allen 2001a**). PANAMA: Panamá distrito, Parque Nacional Soberanía, Rio Masambí Grande en el camino hacia Canopy Tower, 9°04′N, 79°40′W, *Salazar Allen et al. 16765*, *16772*, *16789*, *16791*, *16796 p.p.*, *16798*, *16799*, *16800*, *16804*, *16805* (PMA, **Salazar Allen 2001a**); Panamá distrito, Parque Nacional Soberanía, Río Pedro Miguel entrando por Camino de Cruces, 9°01′N, 79°36′W, *Rodríguez 220b*, *221* (PMA, **Salazar Allen 2001a**); Panamá distrito, Parque Nacional Soberanía, Río Pedro Miguel entrando por Camino de Cruces, 9°01′N, 79°36′W, *Salazar Allen et al. 14390* (PMA, **TYPE, Salazar Allen 2001a**); Panamá distrito, Parque Nacional Soberanía, Río Pedro Miguel entrando por Camino de Cruces, 9°01′N, 79°36′W, *Salazar Allen et al. 14386 p.p.*, *14393*, *14395 p.p.*, *16599*, *16600*, *16612 p.p.*, *16613 p.p.*, *16643* (PMA, **Salazar Allen 2001a**; **Bischler-Causse et al. 2005**); Panamá distrito, Parque Nacional Soberania, Rio Pedro Miguel, Camino de Cruces, Sendero El Charco, 9°05′N, 79°41′W, *Rodríguez 209*, *220*, *211*, *216* (PMA, **Salazar Allen 2001a**; **Bischler-Causse et al. 2005**); Panamá distrito, Parque Nacional Soberanía, Sendero Natural El Charco, 70 m, 1 Dec 2004, *Salazar Allen et al. 20993* (PMA, **Salazar Allen et al. 2017**).

Not found outside Central America.

Cyathodium cavernarum Kunze, *Nov. Stirp. Pug.* 6: 18, 1834 (Lehmann 1834). Type: Cuba.

COSTA RICA. S. loc. (Gradstein et al. 2016; Gradstein 2021); S. loc., *Salazar Allen et al. 20549*, *20568*, *20917*, *20918*, *20921* (PMA, **Salazar Allen and Korpelainen 2006**). ALAJUELA: Alajuela cantón, Universidad Adventista de Centroamerica, *Salazar Allen et al. 16090* (PMA, SJ, **Bischler-Causse et al. 2005**); Atenas cantón, a ~20 m del letrero Altos del Monte, *Salazar Allen et al. 16109*, *16111*, *16116*, *etc.* (PMA, **Bischler-Causse et al. 2005**; **Dauphin 2005**); Atenas, *Salazar Allen et al. 16106*, *16112*, *16113*, *etc.* (PMA, SJ, **Bischler-Causse et al. 2005**); Río Quatro cantón, San Miguel de Sarapiqui, Cerro Congo, *Salazar Allen et al. 16162* (PMA, SJ, **Bischler-Causse et al. 2005**); road to Carrara, *Salazar Allen et al. 16099*, *16100*, *16101*, *etc.* (PMA, SJ, **Bischler-Causse et al. 2005**); San Carlos cantón, Area de Conservación Arenal por la carretera de piedra de Pocosol a la Laguna, *Salazar Allen et al. 20547*, *20555*, *20556*, *20570* (PMA, **Dauphin 2005**; **Salazar Allen and Korpelainen 2006**); San Mateo cantón, Quebrada Fierro, *Salazar Allen et al. 16137*, *16138*, *16139*, *etc.* (PMA, SJ, **Bischler-Causse et al. 2005**); San Mateo, *Salazar Allen et al. 16124*, *16125*, *16126*, *etc.* (PMA, SJ, **Bischler-Causse et al. 2005**). SAN JOSÉ: Acosta cantón, Camino a San Ignacio de Acosta, cerca del pueblo del Cangrejal, *Salazar Allen et al. 20708* (**Dauphin 2005**); Camino a Puntarenas, Cerca del Curce de Paso Real, 86 km de Pérez Zeledón, Río Cataratas, *Salazar Allen et al. 20694*, det. Salazar Allen (PMA, **Dauphin 2005**); Pérez Zeledón cantón, Fila Tinamastes, San Isidro El General, Sitio donde está una virgen de la Medalla Milagrosa, *Salazar Allen et al. 20688* (**Dauphin 2005**); Pérez Zeledón cantón, Pan-American Highway Sur, camino a San Isidro El General, a 375.62 km de San José, Río Cataratas, *Salazar Allen et al. 20680* (**Dauphin 2005**; **Salazar Allen and Korpelainen 2006**); San José cantón, Zoológico Nacional Simón Bolivar, *Salazar Allen et al. 16082*, *16083*, *16084*, *etc.* (PMA, SJ, **Bischler-Causse et al. 2005**); San José cantón, Zoológico Simón Bolívar, 9°56′25″N, 84°04′35″W, *Salazar Allen 16085*, det. Salazar Allen (PMA, **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 2021; Gradstein et al. 2016; Salazar Allen et al. 2004; Stotler et al. 1998). COCLÉ: Antón distrito, El Valle de Antón, cerca del Mirador, 736, 21 Jul 2004, *Salazar Allen et al. 20926*, *20927* (PMA, **Salazar Allen et al. 2017**); Antón distrito, El Valle de Antón, Guayabo, 624 m, 21 Jul 2004, *Salazar Allen et al. 20939* (PMA, **Salazar Allen et al. 2017**); Antón distrito, El Valle de Antón, Río Las Mozas 8°37′N, 80°08′W (**Salazar Allen 2001a**); Antón distrito, El Valle de Antón, Río Las Mozas, *Rodríguez 169*, *170* (PMA, **Bischler-Causse et al. 2005**); Antón distrito, El Valle de Antón, Río Las Mozas, *Salazar Allen et al. 14457*, *14520*, *16555*, *etc.* (PMA, **Bischler-Causse et al. 2005**); Antón distrito, Quebrada El Guayabo, *Salazar Allen et al. 16592*, *16595* (PMA, **Bischler-Causse et al. 2005**). COLÓN: Portobelo distrito, Aduana de Portobelo, *Salazar Allen & Santamaria* (PMA, **Bischler-Causse et al. 2005**). LOS SANTOS: Tonosí distrito, Parque Nacional Cerro Hoya, E of Rio Progreso, *Rivera* (PMA, **Bischler-Causse et al. 2005**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, *Salazar Allen & H. Korpelainen 15692*, *15694*, *Salazar Allen et al. 17005* (PMA, **Salazar Allen and Korpelainen 2006**). PANAMA: Panamá distrito, Cuevas de Chilibre, *Salazar Allen et al. 16660*, *16661*, *16665* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, La Cascada, *Rodríguez 226*, *234*, *235* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, Parque Nacional Soberanía (**Salazar Allen 2001a**); Panamá distrito, Parque Nacional Soberanía, Río Pedro Miguel entrando por Camino de Cruces, 9°01′N, 79°36′W, *Rodríguez 221* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, Parque National Soberanía, Sendero El Charco, *Salazar Allen et al. 14311*, *14825*, *14832*, *etc.* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, Rio Pedro Miguel, Camino de Cruces, *Rodríguez 179*, *220* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, Rio Pedro Miguel, Camino de Cruces, *Salazar Allen et al. 14383*, *14387*, *14395*, *etc.* (PMA, **Bischler-Causse et al. 2005**). VERAGUAS: Montijo distrito, Isla Coiba, 200 ft (61 m), *Antonio 2366* (MA, PMA, **Salazar Allen and Chung 1997a**; **Stotler et al. 1998**).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa(?), East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, Mexico, the Caribbean, Western South America, Brazil.

Cyathodium foetidissimum Schiffn., *Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl.* 67: 154, 1898 (Schiffner 1898b). Type: Indonesia.

COSTA RICA. S. loc. (Gradstein 2021). CARTAGO: Paraíso cantón, Orosi, puente colgante Río Grande de Orosi, 1,200 m, *Salazar Allen et al. 20618* (PMA, **Dauphin 2005**; **Salazar Allen and Korpelainen 2006**; **Salazar Allen et al. 2017**); Paraíso cantón, Parque Nacional Tapantí, Valle del Río Grande de Orosi, 1,200 m, *Salazar Allen et al. 20619* (PMA, **Salazar Allen and Korpelainen 2006**; **Salazar Allen et al. 2017**); Paraíso cantón, Tapanti National Park, *Salazar Allen et al. 20635*, *20636* (PMA, **Salazar Allen and Korpelainen 2006**); Paraíso cantón, Valle del Río Grande de Orosi, cerca del puente colgante sobre el Río Grande de Orosi, en la carretera 224 de Purisil hacia el Parque Nacional Tapantí, 9°46′00′N, 83°48′10′W, 1,200 m, Mar 2001–Feb 2002, *Salazar Allen et al. 15*, *25*, *26*, *27*, *47*, *48*, *49* (PMA, **Salazar Allen et al. 2004**; **Dauphin 2005**; **Salazar Allen and Korpelainen 2006**).

Also reported from Southeastern Europe, West-Central Tropical Africa, East Tropical Africa, Indian Subcontinent(?), Malesia, Papuasia, Southeastern Pacific, Western South America.

Cyathodium spruceanum Prosk., *Bryologist* 54(4): 243, 1952 (Proskauer 1951b). Type: Peru.

COSTA RICA. S. loc., *Salazar Allen & Lepiz 20565*, *20569*, *20914*, *20916* (PMA, **Salazar Allen and Korpelainen 2006**). ALAJUELA: Atenas cantón, Alto del Monte, 9°59′10″N, 84°20′40″W, *Salazar Allen et al. 16121* (PMA, **Bischler-Causse et al. 2005**); San Carlos cantón, Area de Conservación Arenal por la carretera de piedra de Pocosol a la Laguna, *Salazar Allen et al. 20557*, *20559*, *20560*, *20564*, *20570* (**Dauphin 2005**; **Salazar Allen and Korpelainen 2006**); San Mateo cantón, Desamparados,

Rio Negro, 9°57′20″N, 84°29′W, Area de La Cascada, *Salazar Allen et al. 16124b*, *16128*, *16129* (PMA, SJ, **Bischler-Causse et al. 2005**; **Dauphin 2005**). SAN JOSÉ: Acosta cantón, Camino hacia San Ignacio de Acosta, a 27.7 km de la intersección de Parrita hacia San Ignacio de Acosta, 480–515 m, *Salazar Allen et al. 20702*, det. Salazar Allen (PMA, **Dauphin 2005**).

PANAMA. S. loc. (Salazar Allen 2001a; Salazar Allen et al. 2004). COCLÉ: Antón distrito, El Valle de Antón, *Salazar Allen et al. 7007* (PMA, **Salazar Allen and Korpelainen 2006**); Antón distrito, El Valle de Antón, Río Las Mozas, 580 m, 21 Jul 2004, *Salazar Allen et al. 20943*, *20946*, *20947*, *etc.* (PMA, **Bischler-Causse et al. 2005**); Antón distrito, Valle de Antón, Río Las Mozas, *Rodríguez 171* (PMA, **Bischler-Causse et al. 2005**). LOS SANTOS: S. loc., *Rivera 202*, *213* (PMA, **Bischler-Causse et al. 2005**). PANAMA WEST: Capira distrito, Parque National Altos de Campana, *Salazar Allen et al. 16549*, *16674*, *16675*, *16679*, *16817*, *16863*, *16955* (PMA, **Salazar Allen and Korpelainen 2006**); Capira distrito, Parque National Soberanía, La Cascada, *Rodríguez 161*, *162*, *Salazar Allen et al. 16688*, *16693*, *16699* (PMA, **Bischler-Causse et al. 2005**); La Chorrera distrito, Barro Colorado, Donato Trail to Lutz tower, 2003, *Dauphin 3084* (**Dauphin et al. 2022**). PANAMA: Condado de El Rey, *Salazar Allen et al. 16080* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, Cuevas de Chilibre, *Salazar Allen et al. 16667* (PMA, **Bischler-Causse et al. 2005**); Panamá distrito, después del mirador de la represa Madden, 118 m, 1 Dec 2004, *Salazar Allen et al. 21003*, *21004* (PMA, **Salazar Allen et al. 2017**); Panamá distrito, Parque Nacional Chagres, Campo Chagres, 110 m, 1 Dec 2004, *Salazar Allen et al. 21002* (PMA, **Salazar Allen et al. 2017**); Panamá distrito, Parque Nacional Soberanía, La Cascada, 76 m, 1 Dec 2004, *Salazar Allen et al. 20999* (PMA, **Salazar Allen et al. 2017**); Panamá distrito, Parque Nacional Soberanía, Sendero Natural El Charco, 70 m, 1 Dec 2004, *Salazar Allen et al. 16699*, *16700*, *20992*, *20994*, *20995*, *20997* (PMA, **Salazar Allen et al. 2017**); Panamá distrito, Río Masambí Grande, camino a Canopy Tower a 0.5 km de la entrada desde la carretera hacia Gamboa, *Salazar Allen et al. 16927*, *16955* (PMA, **Salazar Allen and Korpelainen 2006**); Panamá distrito, Rio Pedro Miguel, Camino de Cruces, *Salazar Allen et al. 14383*, *14389*, *16549*, *etc.* (PMA, **Bischler-Causse et al. 2005**).

Also reported from Western South America.

Cyclolejeunea A.Evans, *Bull. Torrey Bot. Club* 31(4): 193, 1904 (Evans 1904).

Cyclolejeunea accedens (Gottsche) A.Evans, *Bull. Torrey Bot. Club* 31(4): 201, 1904 (Evans 1904).

≡*Lejeunea accedens* Gottsche, *Syn. Hepat.* 3: 339, 1845 (Gottsche et al. 1845a). Type: Saint Kitts.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 250* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Dauphin* (USJ, **Kappelle 1996**); S. loc. (Eggers et al. 1998; Schäfer-Verwimp 2014; Prado and Ilkiu-Borges 2021). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Orosi, Tapanti National Park, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1897* (CR, **Dauphin 2005**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-35*, *92-36*, *92-210*, *etc.* (hb. Lücking, **Lücking 1995**; **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, *Gradstein & Solano 9459* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Monteverde, 1,550 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Schäfer-Verwimp & Holz SV/H-0279/A* (M, **Czumay et al. 2013**; **Heinrichs et al. 2014a**, **2014b**, **2014c**); Madreselva, *Dauphin* (USJ, **Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Eggers 2001).

PANAMA. *BOCAS DEL TORO: Chiriquí Trail Cloud Forest, 18 Apr 1938, *Kirkbride & Duke 762A*, det. Dauphin Jun 2017 (MO-6169710!, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34497/C*, *34503* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34218/A* (JE, **Schäfer-Verwimp 2014**; **Prado and Ilkiu-Borges 2021**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34263/C* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *663*, *etc.* (PMA, **Sierra et al. 2019a**).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 550 m, *Lücking 92-328* (USJ, **Gradstein et al. 1994**; **Dauphin 1995**, **1999**, **2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, Jun 2016, *Sanchez 2753*, det. Dauphin 2016 (CR!, **this publication**); S. loc., *Soto*, det. G. Dauphin Apr 2021 (USJ-47365!, **this publication**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 550 m, *Lücking 92-366* (hb. Lücking, **Bernecker-Lücking 1998b**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, ~550 m, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 500–634 m, 31 Mar 1988, *Lücking 92-328*, det. A. Lücking 1992 (USJ-47365!, **this publication**); Yglesias E, 500–634 m, Apr 1992, *Lücking 307*, *609*, *616*, *710* (USJ, **Bernecker-Lücking 2000**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cyclolejeunea chitonia (Taylor) A.Evans, *Bull. Torrey Bot. Club* 31(4): 194, 1904 (Evans 1904).

≡*Lejeunea chitonia* Taylor, *Nov. Stirp. Pug.* 8: 27, 1844 (Lehmann 1844). Type: Guyana.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 12* (USCG, **Freire et al. 2013**).

COSTA RICA. S. loc. (Schäfer-Verwimp 1999; Prado and Ilkiu-Borges 2021; Pócs et al. 2022). ALAJUELA: Río Cuatre cantón, Laguna Hule, *Dauphin & Gonzáles 2123* (CR, **Dauphin 2005**); San Ramon cantón, La Palma, 12 Nov 1920, *Brenes 168*, det. Dauphin Jun 2017 (MO-5243770!, **this publication**). HEREDIA: Sarapiquí cantón, La Selva Biological Station, *Arroyo-Rodríguez* (**Arroyo-Rodriguez et al. 2007**); Sarapiquí cantón, La Selva Biological Station, Feb 1997, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, La Selva, SCH trail (Dauphin 2005). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-91*, *91-92*, *91-93*, *etc.* (hb. Lücking, USJ, **Gradstein et al. 1994**; **Lücking 1995**; **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Cuatro Esquinas de San Juan, *Dauphin et al. 1665* (CR, **Dauphin 2005**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, 40–1,000 m, *Dauphin 1875* (CR, **Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 8 May 1992, *Lyon 219B*, det. Whittemore 1995 (MO-4411451!, **this publication**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. S. loc. (Lücking 1995; Schäfer-Verwimp 1999); S. loc., *Schäfer-Verwimp & Verwimp 30724* (M, **Heinrichs et al. 2014c**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41,4′N, 82°13,7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34456/D*, *34462*, *34518/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, 16 Mar 1996, *Reiner-Drehwald 960068* (GOET, **Prado and Ilkiu-Borges 2021**); S. loc., *Reiner-Drehwald 960092* (GOET, **Prado and Ilkiu-Borges 2021**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 699*, *760* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9247* (PMA, **Stotler et al. 1998**); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9252 p.p.* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road. 9°13.4–5′N, 79°22.7–9′W, 995 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30724* (JE, **Schäfer-Verwimp 2014**); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 20 Mar 1996, *Reiner-Drehwald 960141* (GOET, **Prado and Ilkiu-Borges 2021**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30814/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cyclolejeunea convexistipa (Lehm. et Lindenb.) A.Evans, *Bull. Torrey Bot. Club* 31(4): 198, 1904 (Evans 1904).

≡*Jungermannia convexistipa* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 43, 1834 (Lehmann 1834). Type: St. Vincent.

=*Lejeunea truncatula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 150, 1884 (Spruce 1884), syn. fide Grolle (1984b). Type: Ecuador.

≡*Cyclolejeunea truncatula* Steph., *Sp. Hepat. (Stephani)* 5: 183, 1913 (Stephani 1913).

=*Cyclolejeunea exigua* Steph., *Sp. Hepat. (Stephani)* 5: 185, 1913 (Stephani 1913), syn. fide Grolle (1984b). Lectotype (Bonner 1963b: 919; see also Grolle 1984b as "holotype") or possibly holotype: Guatemala, Cobán, 1,500 m, s.d., *Türckheim s.n.*, in hb. Levier 5591 (G-00060850 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=114707&lang=en).

GUATEMALA. S. loc. (**Stephani 1913** as *Cyclolejeunea exigua* and *Cyclolejeunea* '*truncatulata*'; Bonner 1963b as *Cyclolejeunea truncatula*; Fulford and Sharp 1990; Lücking 1995; Ilkiu-Borges 2000; Bastos 2004; Prado and Ilkiu-Borges 2021). ALTA VERAPAZ: Cobán, 1,500 m, *Türckheim* (G, **TYPE** of *Cyclolejeunea exigua*, **Bonner 1963b** as *Cyclolejeunea exigua*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., 1,600 m, *Türckheim 6312* (G, **Grolle 1984b**); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la

Conservación del Quetzal, *Freire et al. 382*, *470*, *526* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). CHIQUIMULA: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., *Pérez 1415* (USCG, Pérez 2009).

BELIZE. S. loc. (**Fulford 1938** as *Cyclolejeunea* '*convexistipula*'; Whittemore and Allen 1996).

HONDURAS. S. loc. (Fulford and Sharp 1990; Lücking 1995; Ilkiu-Borges 2000; Bastos 2004; Prado and Ilkiu-Borges 2021). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54174*, *54612*, *54793*, *55621* (**Herzog 1951**; **Grolle 1964b**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56762* (US, **Herzog 1951**).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Ilkiu-Borges 2000; Bastos 2004; Prado and Ilkiu-Borges 2021). ALAJUELA: Río Cuatre cantón, Laguna Hule, *Dauphin & Gonzáles 2109* (CR, **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes (Dauphin 2005); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Lücking 97-48*, *97-49* (hb. Lücking, **Bernecker-Lücking 1998b**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, 5 May 1991, *Zamora* (USJ, **Bernecker-Lücking 1998b**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, 9–10 May 1992, *Dauphin & Wagner* (USJ, **Bernecker-Lücking 1998b**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Orosi, Tapantí National Park, *Morales 2264* (USJ, **Bernecker-Lücking 1998b**); Paraíso cantón, Tapanti National Park, *Lücking 97-50*, *97-51*, *97-52* (hb. Lücking, **Bernecker-Lücking 1998b**); Paraíso cantón, Tapanti National Park, 28 Jun 1992, *Rodríguez* (USJ, **Bernecker-Lücking 1998b**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3311* (CR, **Heinrichs et al. 2014c**); Liberia cantón, Guanacaste National Park, Pitilla, *Dauphin 1899* (CR, **Dauphin 2005**); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Isidro cantón, Cerro de Caricias, *Standley 51985 p.p.* (**Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Herzog 1951**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49802 p.p.* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-108* (hb. Lücking, **Lücking 1995**; **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-109*, *91-110*, *91-111*, *etc.* (hb. Lücking, **Lücking 1995**; **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Talamanca, *Tonduz 15607* (G, **Grolle 1984b**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,550 m, *Dauphin* (GOET, **Gradstein and Schäfer-Verwimp 2011**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Monteverde Cloud Forest Preserve, 12 Jul 1991, *Conejo* (USJ, **Bernecker-Lücking 1998b**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Moravia cantón, La Palma, 1,600 m (Eggers 2001); Moravia cantón, La Palma, 1,450–1,550 m, *Maxon 383* (**Grolle 1984b**); Moravia cantón, La Palma, *Maxon* (MO, **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, *Standley 33146* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Lücking 1995; Ilkiu-Borges 2000; Bastos 2004; Eggers et al. 2004); S. loc., *Holz FG00-0217* (GOET, **Ilkiu-Borges 2016**); S. loc., *Salazar Allen & Gradstein 9406* (GOET, **Ye et al. 2013**; **Ye and Zhu 2018**; **Ye and Wei 2021**); S. loc., *Schäfer-Verwimp & Verwimp 30786* (M, **Heinrichs et al. 2014c**); S. loc., *Schäfer-Verwimp & Verwimp 34520* (M, **Heinrichs et al. 2014b**). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño 3383*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34520* (JE, MG, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34482*, *34497/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, 16 Mar 1996, *Reiner-Drehwald 960070* (GOET, **Prado and Ilkiu-Borges 2021**); S. loc., *Reiner-Drehwald 960075* (GOET, **Prado and Ilkiu-Borges 2021**); S. loc., *Reiner-Drehwald 960144* (GOET, **Prado and Ilkiu-Borges 2021**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30786* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34737/B* (JE, **Schäfer-Verwimp**

2014); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30745 p.p.* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34171/B* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa, 8°36.8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34191*, *34218/B*, *34233*, *34262/A* (JE, **Schäfer-Verwimp 2014**; **Prado and Ilkiu-Borges 2021**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *663*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9234* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850 m, *Salazar Allen et al. 9431* (PMA, **Stotler et al. 1998**). PANAMA: Panamá distrito, Chagres National Park, Altos de Cerro Azul, 800 m, *Gradstein 9783b* (GOET, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30859* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 468*, *469*, *472*, *473*, *503* (ULM, USJ, **Bernecker-Lücking 2000**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 979* (USJ, **Dauphin 1995**, **1999**, **2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, Jun 2016, *Sanchez 2758*, det. Dauphin 2016 (CR!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, *Dauphin 926*, det. G. Dauphin Mar 2021 (USJ-47196!, CR-44688404!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 15 Feb 1994, *Dauphin 926* (USJ, **Dauphin 1995**, **1999**, **2005**); Río Pittier (Yglesias Bay), *Lücking 92-364* (hb. Lücking, **Bernecker-Lücking 1998b**); S. loc. (Fosberg and Klawe 1966; Dauphin 1995, 2005); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 550 m, *Lücking 92-365* (hb. Lücking, **Bernecker-Lücking 1998b**); Wafer Bay, 28 Jun 1932, *Howell 227 p.p.* (CAS, **Clark 1953a**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cyclolejeunea foliorum (Nees) Grolle, *J. Hattori Bot. Lab.* 65: 403, 1988 (Grolle 1988).

≡*Lejeunea foliorum* Nees, *Syn. Hepat.* 3: 326, 1845 (Gottsche et al. 1845a). Type: *s. loc.*

***NICARAGUA.** *ATLÁNTICO SUR: Nueva Guinea municipio, road to Colonia Yolaina, 11°40′N, 84°26′W, 180–200 m, 11–12 Feb 1978, *Stevens 6378 p.p.*, det. Dauphin May 2017 (MO-6699915! http://tropicos.org/specimen/100988653, **this publication**).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4467*, *4470*, *4506*, *4508* (PMA, **Dauphin et al. 2015**).

Also reported from Northern South America, Western South America, Brazil.

Cyclolejeunea luteola (Spruce) Grolle, *Wiss. Z. Friedrich-Schiller-Univ. Jena, Math.-Naturwiss. Reihe* 33: 761, 1984 (Grolle 1984b).

≡*Lejeunea luteola* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 205, 1884 (Spruce 1884). Type: Venezuela.

=*Prionolejeunea crenulata* Steph., *Sp. Hepat. (Stephani)* 5: 216, 1913 (Stephani 1913), syn. fide Grolle (1987). Lectotype (Grolle 1987 as "holotype") if not holotype: Guatemala, s. loc., 1908, *Türckheim*, hb. Levier 5823 (G-00069250 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115342&lang=en).

GUATEMALA. S. loc. (**Stephani 1913** as *Prionolejeunea crenulata*; Bastos 2004); S. loc., *Türckheim 5826* (**Geissler and Bischler 1989** as *Prionolejeunea crenulata*); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Grolle 1987**; **Ilkiu-Borges 2016** as *Prionolejeunea crenulata*); S. loc., *Türckheim* (G-17975, **Grolle 1984b**); S. loc., 1908, *Türckheim* (**TYPE** of *Prionolejeunea crenulata*, **Grolle 1987**; **Prado and Ilkiu-Borges 2021**).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Prado and Ilkiu-Borges 2021). CARTAGO: El Guarco cantón, La Esperanza, 1.5 km N Pan-American Highway (km 61.5), 2,460 m, 4 Dec 1985, *Kappelle 224* (GOET, **Holz et al. 2001**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-108*, *91-109*, *91-110*, *etc.* (hb. Lücking, **Bernecker-Lücking 1998b**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1360* (CR, **Dauphin 2005**); Monteverde cantón, Campbell's Wood, 1,550 m, *Sillett 3-8* (U, **Gradstein et al. 1994**); Monteverde cantón, Campbell's Wood, *Sillett 42436* (**Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 30955* (M, **Heinrichs et al. 2014c**). CHIRIQUÍ: Boquete distrito, Bajo

Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30955* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30773 p.p.* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, *Lücking 92-327* (USJ, **Dauphin 1995**); Río Genio, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-284* (**Gradstein et al. 1994**; **Dauphin 2005**); Río Pittier (Yglesias Bay), *Lücking 92-367* (hb. Lücking, **Bernecker-Lücking 1998b**); S. loc., *Lücking* (USJ, **Dauphin 1999**); S. loc., 1994, *Dauphin A-4/17* (USJ, **Bernecker-Lücking 1998b**); trail to summit of Cerro Yglesias, 5°31′N, 87°04–05′W, 500–634 m, 31 Mar 1988, *Lücking 92-317*, det. A. Lücking 1992 (USJ-47520!, **this publication**); Yglesias E, 500–634 m, Apr 1992, *Lücking 710* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Cyclolejeunea peruviana (Lehm. et Lindenb.) A.Evans, *Bull. Torrey Bot. Club* 31(4): 196, 1904 (Evans 1904).

≡*Jungermannia peruviana* Lehm. et Lindenb., *Nov. Stirp. Pug. 5*: 18, 1833 (Lehmann 1833). Type: Peru.

≡*Lejeunea peruviana* (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 339, 1845 (Gottsche et al. 1845a).

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Chelemhá, *Pérez 307* (USCG, Pérez 2006, **2009**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Lophocolea*' *peruviana*). EL PETÉN: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., *Pérez 1405* (USCG, Pérez 2009). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

BELIZE. CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,140 m, 10 Dec 1993, *Allen 15350*, det. Whittemore 1995 (BRH, MO-4421581, **Whittemore and Allen 1996**).

HONDURAS. S. loc. (Jovet-Ast 1957; Grolle 1988; Lücking 1995; Wanek and Pörtl 2008; Prado and Ilkiu-Borges 2021). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 55605*, *55611*, *55622*, *etc.* (US, **Herzog 1951**).

COSTA RICA. S. loc. (Jovet-Ast 1957); S. loc., *Schäfer-Verwimp & Holz SV/H-0280/A* (M, **Heinrichs et al. 2014c**); S. loc., *Schäfer-Verwimp & Holz SV/H-0300/A* (JE, **Prado and Ilkiu-Borges 2021**). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes (Dauphin 2005); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, 5 May 1991, *Zamora* (USJ, **Bernecker-Lücking 1998b**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Refugio de Fauna Silvestre de Tapanti, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); Paraíso cantón, Tapanti National Park, *Lücking 97-52* (hb. Lücking, **Bernecker-Lücking 1998b**); Paraíso cantón, Tapanti National Park, *Morales 2158* (USJ, **Bernecker-Lücking 1998b**); S. loc., *Schäfer-Verwimp & Holz SV/H-0327/b* (JE, **Prado and Ilkiu-Borges 2021**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1899 p.p.* (CR, **Dauphin 2005**); Tilarán cantón, La Tejona, N of Tilarán, 600–700 m, *Standley 45762a* (**Herzog 1951**; **Morales 1991**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, *Standley 51985* (**Herzog 1951**; **Morales 1991**); San Isidro cantón, Yerba Buena, 2,000 m (Dauphin 2005); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49802 p.p.* (**Herzog 1951**; **Morales 1991**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Braulio Carrillo National Park, 24 Oct 1991, *Dauphin* (USJ, **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 91-18*, *91-19*, *etc.* (hb. Lücking, **Lücking 1995**; **Bernecker-Lücking 1998b**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 460–480 m, Mar 1994, *Lücking 94-49* (MG, **Prado and Ilkiu-Borges 2021**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Guapíles, ~400 m (Eggers 2001); Pococí cantón, Guápiles, 300–500 m, *Standley 37060*, *37615* (**Herzog 1951**; **Morales 1991**); Pococí cantón, Tortuga Lodge near Tortuguero, 21 Feb 1985, *Eggers CR 12/82* (**Eggers et al. 2001**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**); Pococí cantón, Tortuguero, Cuatro Esquinas, *Dauphin et al. 1673* (CR, **Dauphin 2005**); S. loc., *Lücking 94-49a*, *94-49b* (SP, **Prado and Ilkiu-Borges 2021**). PUNTARENAS: Coto Brus cantón, Fila Cruces, *Dauphin 1782* (CR, **Dauphin 2005**); Coto Brus cantón, San Vito, La Cruces Botanical Garden, Jan 1990, *Menjivar* (USJ, MO-5624274, **Bernecker-Lücking 1998b**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Genesis II Cloud Forest Reserve, Cordillera de Talamanca, *Lücking* (hb. Lücking, **Bernecker-Lücking 1998b**); Moravia cantón, La Palma (Dauphin 2005); Moravia cantón, La Palma, 1,600 m, *Standley 33221* (**Herzog 1951**; **Morales 1991**).

PANAMA. S. loc. (Lücking 1995). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34487/B*, *34497/B* (JE, **Schäfer-Verwimp 2014**; **Prado and Ilkiu-Borges 2021**); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, 16 Mar 1996, *Reiner-Drehwald 960068* (GOET, **Prado and Ilkiu-Borges 2021**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *672*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9235*, *9236* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, *Spörle 5243a* (PMA, **Spörle 1990**); Panamá distrito, Cerro Jefe, along creek of Río San Cristóbal, *Salazar Allen et al. 5243* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 969*, det. G. Dauphin Apr 2021 (USJ-47194!, CR-4468406!, W-0207431! https://w.jacq.org/W0207431, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-250* (hb. Lücking, **Lücking 1995**; **Bernecker-Lücking 1998b**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 969* (CR, USJ, **Dauphin 1995**, **1999**, **2005**); S. loc., *Soto*, det. G. Dauphin Apr 2021 (USJ-47365!, **this publication**); Yglesias E, 500–634 m, Apr 1992, *Lücking 706*, *707* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cyclolejeunea schaefer-verwimpii M.L.M.Prado et Ilk.-Borg., *Nova Hedwigia* 113(1/2): 130, 2021 (Prado and Ilkiu-Borges 2021). Holotype: Panama, Chiriquí, Reserva Forestal Fortuna, 8°44.3′N, 82°14.7′W, "epiphytisch, feuchtes Sekundärgebüsch am Ufer des Stausees," 1,100 m, 31 Mar 2013, *Schäfer-Verwimp & Verwimp* 34520 (JE; isotype: MG).

PANAMA. CHIRIQUÍ: Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34520* (JE, MG, **Prado and Ilkiu-Borges 2021**, **TYPE**).

Also reported from the Caribbean.

Cylindrocolea R.M.Schust., *Bull. Natl. Sci. Mus. Tokyo, n.s.*, 12(3): 666, 1904 (Schuster 1969b).

Cylindrocolea rhizantha (Mont.) R.M.Schust., *Nova Hedwigia* 22: 175, 1972 (Schuster 1971b).

≡*Jungermannia rhizantha* Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 454, 1842 (Montagne 1842b). Type: Cuba.

GUATEMALA. EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**).

BELIZE. S. loc. (Fulford and Sharp 1990; Dauphin et al. 1998). COROZAL: Libertad, *Lundell 2276* (MICH, **Fulford 1976**); S. loc. (Whittemore and Allen 1996).

†HONDURAS. S. loc. (Schuster 2002). Note: Schuster said that *Cylindrocolea rhizantha* from Honduras and southward may be *Chonecolea*. We do not know of any firsthand report from Honduras.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3152* (PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado Island, Pearson 12, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3108* (PMA, **Dauphin et al. 2006, 2022**).

Also reported from Southeastern USA, Mexico, the Caribbean, Western South America, Brazil.

Dibrachiella (Spruce) X.Q.Shi, R.L.Zhu et Gradst., *Taxon* 64(5): 888, 2015 (Shi et al. 2015).

Dibrachiella auberiana (Mont.) X.Q.Shi, R.L.Zhu et Gradst., *Taxon* 64(5): 888, 2015 (Shi et al. 2015).

≡*Lejeunea auberiana* Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 483, 1842 (Montagne 1842b). Type: Cuba.

≡*Archilejeunea auberiana* (Mont.) Steph., *Hedwigia* 29(3): 134, 1890 (Stephani 1890a).

=*Lejeunea florentissima* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 95, 1884 (Spruce 1884), syn. in Gradstein and Buskes (1985). Type: Peru.

≡*Archilejeunea florentissima* (Spruce) Steph., *Sp. Hepat. (Stephani)* 4: 722, 1911 (Stephani 1911b).

≡*Archilejeunea parviflora* var. *florentissima* (Spruce) Gradst. et Buskes, *Beih. Nova Hedwigia* 80: 104, 1985 (Gradstein and Buskes 1985).

GUATEMALA. EL PETÉN: San Andres municipio, Estación Biológica Las Guacamayas, Laguna del Tigre, *Can et al.* (USCG, **Morales 2011** as *Archilejeunea auberiana*).

BELIZE. S. loc. (**Fulford 1938** as *Archilejeunea auberiana*).

HONDURAS. S. loc. (Dauphin et al. 1998 as *Archilejeunea auberiana*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54428*, *55342 p.p.*, *55558*, *etc.* (**Herzog 1951** as *Archilejeunea florentissima*).

NICARAGUA. S. loc. (Ilkiu-Borges 2000 as *Archilejeunea auberiana*; Bastos 2004 as *Archilejeunea auberiana*). ATLÁNTICO SUR: Escondido River (US, YU, **Gradstein 1994** as *Archilejeunea auberiana*); Escondido River, Oct 1982 (YU, **Gradstein and Buskes 1985** as *Archilejeunea parviflora* var. *florentissima*).

COSTA RICA. GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Sector Santa María, "Los Naranjos"

near Provision rivulet, 10°46′20″N, 85°17′15″W, 920 m, *Dauphin 2300*, *2301* (CR, **Dauphin et al. 1998** as *Archilejeunea auberiana*; **Dauphin 2005** as *Archilejeunea auberiana*).

PANAMA. Canal Zone (Schäfer-Verwimp 2014 as *Archilejeunea auberiana*); S. loc. (Dauphin et al. 1998 as *Archilejeunea auberiana*). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34137* (JE, **Schäfer-Verwimp 2014** as *Archilejeunea auberiana*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Salazar Allen & Gradstein 15099* (PMA, **Stotler et al. 1998** as *Archilejeunea auberiana*; **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34288* (JE, **Schäfer-Verwimp 2014** as *Archilejeunea auberiana*); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30813* (JE, **Schäfer-Verwimp 2014** as *Archilejeunea auberiana*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Dibrachiella parviflora (Nees) X.Q.Shi, R.L.Zhu et Gradst., *Taxon* 64(5): 889, 2015 (Shi et al. 2015).

≡*Jungermannia parviflora* Nees, *Fl. Bras. (Martius)* 1(1): 353, 1833 (Nees 1833b). Type: Brazil.

≡*Archilejeunea parviflora* (Nees) Steph., *Hedwigia* 29(3): 134, 1890 (Stephani 1890a).

=*Jungermannia leprieurii* Mont., *Ann. Sci. Nat., Bot.*, ser. 2, 3: 213, 1835 (Montagne 1835), syn. fide Gradstein and Buskes (1985). Type: French Guiana.

≡*Archilejeunea leprieurii* (Mont.) Schiffn., *Hepat. (Engl.-Prantl)*: 130, 1893 (Schiffner 1893a).

=*Archilejeunea viridissima* (Lindenb.) Steph. f. *multiflora* Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras, Lancetilla Valley, *Standley s.n.* (no specimen corresponding to this name has been found).

GUATEMALA. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Archilejeunea parviflora*).

***BELIZE.** *TOLEDO: Punta Gorda, Oct 1932, *White 20*, det. Dauphin Jun 2017 (MO-5375138! http://tropicos.org/specimen/101411619, **this publication**).

HONDURAS. S. loc. (Ilkiu-Borges 2000 as *Archilejeunea parviflora*; Oliveira-e-Silva and Yano 2000 as *Archilejeunea parviflora*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55342* (JE, **Gradstein 1994** as *Archilejeunea parviflora*); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Archilejeunea viridissima* f. *multiflora*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Archilejeunea leprieurii*). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Dauphin 2018* (CR, **Dauphin 2005** as *Archilejeunea parviflora* var. *parviflora*); Monteverde (Morales 1991 as *Archilejeunea parviflora* var. *parviflora*); Monteverde, 1,100 m, 11 Mar 1965, *James, W. & James, M. 100* (R, MO-6168484, **Reed and Robinson 1971** as *Archilejeunea leprieurii*; **Dauphin 2005** as *Archilejeunea parviflora* var. *parviflora*); Osa, *Gradstein & Dauphin 9370* (GOET, **Wilson et al. 2007** as *Archilejeunea parviflora*; **Feldberg et al. 2014** as *Archilejeunea parviflora*; **Wang et al. 2014** as *Archilejeunea parviflora*, **2016**; **Shi et al. 2015** as *Archilejeunea parviflora*).

PANAMA. S. loc. (Oliveira-e-Silva and Yano 2000 as *Archilejeunea parviflora*). CHIRIQUÍ: Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020** as *Archilejeunea parviflora*). DARIÉN: Base of Cerro Pirre, *Salazar Allen & Gradstein 9227* (PMA, U, **Gradstein 1994** as *Archilejeunea parviflora*; **Stotler et al. 1998** as *Archilejeunea parviflora*); Cerro Pirre (Stotler et al. 1998 as *Archilejeunea parviflora*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Archilejeunea parviflora*); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Archilejeunea parviflora*). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, Sendero de Interpretación, 1 km E del campamento de los guardabosques del INRENARE, 8°40′N, 79°55′W, 800–900 m, 7 Apr 1989, *Lara et al. 1459* (PMA, **Dauphin et al. 2006** as *Archilejeunea parviflora*); La Chorrera distrito, Barro Colorado Island, *Chung & Aranda 238*, *243* (PMA, NY, **Gradstein 1994** as *Archilejeunea parviflora*; **Stotler et al. 1998** as *Archilejeunea parviflora*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15109* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Barbour 27–28, *Salazar Allen 4424b* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3160* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Sendero T. Barbour 27–28, *Salazar Allen 4424*, *4426* (PMA, **Stotler et al. 1998** as *Archilejeunea parviflora*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Lathrop-Barbour, 2003, *Dauphin 3100* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3059* (CR, PMA, **Dauphin et al. 2022**).

***COCOS I.** Fila entre Bahía Wafer y Chatham, sendero hacia Cerro Yglesias, sobre ladera hacia Valle de los Piratas, Cuenca del Río Minuta, 5°32′56.9″N, 87°03′28.3″W, 251 m, *Estrada et al. 6140*, det. G. Dauphin May 2021 (CR-4468344!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

***Dicranolejeunea* (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).**

Dicranolejeunea axillaris (Nees et Mont.) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

≡*Lejeunea axillaris* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 59, 1836 (Nees and Montagne 1836). Type: Peru.

=*Dicranolejeunea longissima* Steph., *Sp. Hepat. (Stephani)* 5: 161, 1912 (Stephani 1912a), syn. fide Kruijt (1985). Lectotype (Bonner 1965: 29; see also Kruijt 1988: 48 as "holotype"): Costa Rica, Cartago, 1,500 m, May 1900, *C. Wercklé s.n.*, hb. Levier 6233 (G-00060875 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=114961&lang=en, isolectotype NY-1041822 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1179538).

=*Brachiolejeunea acuta* S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 316, 1968 (Winkler 1967), syn. nov. Type: El Salvador, Santa Ana, Cerro Miramundo, 23 May 1962, *Winkler B/6/c/8* (material not available fide Gradstein 1994). Note: Van Slageren (1985b) could not examine the type, but he suggested that it should be excluded from *Brachiolejeunea* based on the description. Gradstein (pers. comm.) placed it in synonymy with *Dicranolejeunea axillaris*, and it is here published as a new synonymy with his approval.

GUATEMALA. S. loc. (Ellis et al. 2019b). ALTA VERAPAZ: Camino a Tactic-Tamahu, *Standley 71077*, *71126* (NY, US, **Kruijt 1988**; **Gradstein 1994**; **Freire 2006**); Cobán, *O'Sharin* (NY, **Kruijt 1988**); S. loc., *Türckheim 1344* (B-24534, BM, G-22644, NY, YU, **Kruijt 1988**; **Gradstein 1994**; **Freire 2006**; **Pérez 2009**); S. loc., *Türckheim* (G, **Kruijt 1988**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). *HUEHUETENANGO: San Mateo Ixtatán municipio, N of San Mateo Ixtatán, 15°51′45.1″N, 91°30′52.1″W, 2,800 m, 11 Apr 2007, *Laeger et al. 3701*, det. Dauphin Jun 2017 (MO-6160442!, **this publication**).

***HONDURAS.** *COMAYAGUA: Meambar municipio, Quebrada Agua Helada, above San José, de los Planes, ~15 km E of Lake Yojoa, 14°47′N, 87°51′W, 9 Mar 1993, *Allen 13683*, det. Whittemore 1996 (MO-4428491! http://tropicos.org/specimen/90040025, **this publication**). *OLANCHO: La Union municipio, La Muralla Biological Reserve, 15°05′N, 86°44′W, 5 Jun 1992, *Allen 12850*, det. Whittemore 1992 (MO-3964983! http://tropicos.org/specimen/101213065, **this publication**).

EL SALVADOR. S. loc. (Ellis et al. 2019b). AHUACHAPÁN: Apaneca municipio, laguna Las Ninfas, Feb 1969, *Brinson*, det. FLAS, U (**Gradstein 1994**). SAN SALVADOR: S. loc., *Mabille* (MANCH, **Kruijt 1988**; **Gradstein 1994**). SANTA ANA: Metapán municipio, Montecristo, calle a Los Planes, 12 Nov 2014, *Búcaro H309*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, calle a Los Planes, 12 Nov 2014, *Búcaro H321* (MHES!, **this publication**); Metapán municipio, Montecristo, Calle Los Planes, 12 Nov 2014, *Búcaro H313*, det. Dauphin (MHES!, **this publication**); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/32/8/5*, *A/32/γ/1* (**Winkler 1967** as *Brachiolejeunea acuta*); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,350 m, 23 May 1962, *Winkler B/6/c/8* (TUB, **TYPE** of *Brachiolejeunea acuta*, **Winkler 1967** as *Brachiolejeunea acuta*; **Bonner 1977** as *Brachiolejeunea acuta*).

***NICARAGUA.** *ESTELÍ: Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 24 Nov 1979, *Stevens & Grijalva 16294*, det. Dauphin Jun 1917 (MO-6236097! http://tropicos.org/specimen/100366012, **this publication**). *GRANADA: Granada municipio, W slope of Volcán Mombacho, 11°49–50′N, 85°58′W, 1 Oct 1977, *Stevens 4387*, det. Whittemore 1989 (MO-3669088! http://tropicos.org/specimen/100200767, **this publication**). *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14′00″N, 85°38′00″W, 10–21 Jan 1982, *Stevens et al. 21413 p.p.*, det. Dauphin May 2017 (MO-6699903!, **this publication**); La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14′00″N, 85°38′00″W, 10–21 Jan 1982, *Stevens et al. 2145*, det. Dauphin May 2017 (MO-6230308!, **this publication**); La Dalia municipio, Macizos de Peñas Blancas, SE side, drainage of Quebrada el Quebradon, slopes N and W of Hacienda San Sebastian, 13°14–15′00″N, 85°38′00″W, 20–21 Jan 1982, *Stevens et al. 21414*, det. Dauphin May 2017 (MO-6230307! http://tropicos.org/specimen/100369450, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (**Stephani 1912a** as *Dicranolejeunea longissima*; Ellis et al. 2019b); S. loc., *Heinrichs et al. AHH-0077* (**Groth-Malonek et al. 2004**); S. loc., *Oersted* (S-B58739, G-00282693, **Kruijt 1988**); S. loc., *Pittier* (**Kruijt 1988**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Castillo 57* (UC, **Norris et al. 2017**). CARTAGO: Alvarado cantón, Coliblanco, *Maxon 347* (NY, YU, **Kruijt 1988**; **Gradstein 1994**); La Estrella, *Standley 39379 p.p.* (**Herzog 1951**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Paraíso cantón, Orosi, *Standley 39628* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Eakin 247* (FLAS, U, **van Slageren and Berendsen 1985**; **Kruijt 1988**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Eakin 297* (FLAS, **Morales 1991**; **Dauphin 2005**); S. loc., May 1900, *Wercklé 6244* (**Kruijt 1988**); S. loc., 1,500 m, May 1900, *Wercklé*, det. G-00060875 (G, **TYPE** of *Dicranolejeunea longissima*, **Bonner 1965** as *Dicranolejeunea longissima*; **Kruijt 1988**). PUNTARENAS: Buenos Aires cantón, Dúrika, *Quesada 1244* (CR, **Dauphin 2005**); Coto Brus cantón Las Cruces garden, ~4 km SSE of San Vito, Dec 1978, *Sipman 11822*, *11935* (U, **Kruijt 1988**); Coto Brus cantón, Fila Cruces, *Dauphin 2052* (CR, **Dauphin 2005**); Coto Brus cantón, Las Cruces, *Gómez-Pignataro 25389*, det. Whittemore Apr 1989 (MO-3665341!, **this publication**); Coto Brus cantón, near San Vito, *Sipman 11822*, *11935* (U, **Gradstein 1994**); Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1604* (CR, **Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 20 Jan 1971, *James, W. 1971-21*, det. Dauphin Jun 2017 (MO-6169715!, **this publication**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Alajuelita cantón, La Verbena, *Tonduz 15631* (B, NY, **Kruijt 1988**; **Gradstein 1994**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Chacón

Holiday Camp to waterfall, *Holz & Schäfer-Verwimp CR 99-1171* (**Schäfer-Verwimp 2001**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Tarrazú cantón, La Palma Forest, *Pittier 6008* (**Stephani 1893c; Morales 1991; Dauphin 2005**).

PANAMA. S. loc. (Ellis et al. 2019b); S. loc., 1906, *Hélion* (PC, **Kruijt 1988**; **Stotler et al. 1998**). CHIRIQUÍ: David, *Hélion 119* (G, **Gradstein 1994**; **Stotler et al. 1998**); David, *Hélion 434* (G-22640, **Kruijt 1988**; **Gradstein 1994**; **Stotler et al. 1998**); S. loc., *Hélion 119 bis* (G-22639, **Kruijt 1988**; **Stotler et al. 1998**); Tierras Altas distrito, Cerro Punta, *Salazar Allen 5253* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Tierras Altas distrito, Cerro Punta, on route to Las Nubes, 1,500 m, *Salazar Allen 515* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Diplasiolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 121, 1893 (Schiffner 1893a).

Diplasiolejeunea alata Jovet-Ast, *Rev. Bryol. Lichénol.* 17(1/4): 31, 1949 (Jovet-Ast 1948). Type: Guadeloupe.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

EL SALVADOR. S. loc. (Schäfer-Verwimp 1992, 1999, 2004). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/6/d/4* (**Winkler 1967**).

COSTA RICA. S. loc. (León et al. 1998; Schäfer-Verwimp 1999, 2004, 2014; Rico and Pócs 2004; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**); Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Cerro de la Muerte, *Morales 2198* (USJ, **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Orosi, Tapantí National Park, *Morales 2182* (USJ, **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Refugio de Fauna Silvestre de Tapanti, 1,400 m (Eggers 2001); S. loc., 2,460 m, *Schäfer-Verwimp & Holz SV/H-0422* (GOET, **Dong et al. 2012**). HEREDIA: San Isidro cantón, Yerba Buena (JE, **Reyes 1982**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/E* (EGR, CR, JE, **Schäfer-Verwimp 2001**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Eggers 2001).

PANAMA. BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30956* (JE, **Schäfer-Verwimp 2014**); S. loc., 1,740 m, *Schäfer-Verwimp et al. 30956* (GOET, **Dong et al. 2012**). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 150* (PMA, **Dauphin 2007**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea brunnea Steph., *Sp. Hepat. (Stephani)* 5: 922, 1916 (Stephani 1916a). Lectotype (Bonner 1965: 40; see also Tixier 1985: 392 as "holotype") or possibly holotype: Guatemala, Alta Verapaz, Cobán, *Türckheim s.n.*, hb. Levier 5826 p.p. (G-00060874 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=114651&lang=en).

=*Diplasiolejeunea galloana* Jovet-Ast., *Rev. Bryol. Lichénol.* 25(3/4): 277, 1956 (Jovet-Ast 1956), syn. fide Tixier (1985). Type: Guadeloupe.

GUATEMALA. S. loc. (**Stephani 1916a**; Jovet-Ast 1956, 1960; **Fulford and Sharp 1990**; Lücking 1995; Oliveira-e-Silva and Yano 2000). ALTA VERAPAZ: Cobán, *Türckheim*, hb. Levier 5826 p.p. (G-16494A, **TYPE**, **Bonner 1965**; **Reyes 1982**; **Tixier 1985**; **Lücking 1995**); Cobán, 1,650 m, Jun 1908, *Türckheim*, hb. Levier 6078 (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, NY, **Reyes 1982**); Laguna Sapalá, *Steyermark 44935* (F, **Reyes 1982**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). HUEHUETENANGO: S. loc., *Pérez 1679* (USCG, Pérez 2009). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers BEZ 3/6* (**O'Shea et al. 1997**); Mountain Pine Ridge, Cave Rio Frio, 600 m, 1996, *Eggers BEZ 2/33* (**O'Shea et al. 1997**). ORANGE WALK: Rio Bravo Reserve, 1996, *Eggers BEZ 4/11* (**O'Shea et al. 1997**). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/8* (hb. Eggers, **O'Shea et al. 1997**); Cockscombe Reserve, 17 Mar 1996, *Eggers BEZ 5/24* (**Eggers et al. 2001** as admixture to *Cololejeunea guadelupensis*).

HONDURAS. S. loc. (Lücking 1995; Oliveira-e-Silva and Yano 2000); S. loc., *Standley 18594* (FH, **Reyes 1982**). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 56875a* (S, **Tixier 1985**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56876* (JE, **Reyes 1982** as *Diplasiolejeunea galloana*).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (**Lücking et al. 2010**). CARTAGO: Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Turrialba cantón, Valle Río Tuis, *Tonduz 6229*, *15566*, *15569* (FH, **Reyes 1982**; **Morales 1991**; **Dauphin 2005**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: S. loc., *Standley 49709* (JE, **Morales 1991** as *Diplasiolejeunea galloana*; **Dauphin 2005** as *Diplasiolejeunea galloana*); San Isidro cantón, Yerba Buena, 22–28 Feb 1926, *Standley 49709a* (JE, **Reyes 1982** as *Diplasiolejeunea galloana*); Sarapiquí cantón, La Selva, *Morales 2242* (USJ, **Morales 1991** as *Diplasiolejeunea galloana*; **Dauphin 2005** as *Diplasiolejeunea galloana*). LIMÓN: Braulio Carrillo National Park, 400–500 m

(Eggers 2001); Guácimo cantón, Jalova, southern border of the Tortuguero National Park, 2 m, 19 Feb 1985, *Eggers CR 12/7* (**Eggers et al. 2001** in specimen of *Cololejeunea guadelupensis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-115*, *92-484*, *92-515*, *92-538*, *92-539*, *92-590* (hb. Lücking, CR, **Lücking 1995**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, *Egremy 329*, det. Dauphin (CR, **Dauphin 2005**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfo Dulce (Eggers 2001); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Osa cantón, Dominical, 20 m, *Eggers* (hb. Eggers, **Eggers 2001**); Osa cantón, Santo Domingo de Golfo Dulce, *Pittier 15603* (NY, FI, **Reyes 1982**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Acosta cantón, El Cornelio, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. S. loc. (Lücking 1995; Oliveira-e-Silva and Yano 2000). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño & Salazar Allen 3364*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30982/B* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30936/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34561* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30768* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30746* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 685*, *752*, *823* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, 11 Sep 1953, *Heim* (PC, **Tixier 1985**); La Chorrera distrito, Barro Colorado, Fuertes Cove, 2003, *Dauphin 3110 3114* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea cavifolia Steph., *Sp. Hepat. (Stephani)* 5: 918, 1916 (Stephani 1916a), nom. nov. pro *Lejeunea cavifolia* Steph., *Bot. Jahrb. Syst.* 8(2): 89, 1886 (Stephani 1886a), nom. illeg. (ICN2018 Art. 53.1 [hom. illeg., non (Ehrh.) Lindb. 1871]). Type: São Tomé.

=*Diplasiolejeunea brachyclada* A.Evans, *Bull. Torrey Bot. Club* 39(5): 216, 1912 (Evans 1912a), syn. fide Grolle (1972b). Type: Puerto Rico.

=*Diplasiolejeunea robertiana* A. Lücking, *Diversit. Mikrohab. Epiphyll Moose*: 84, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in a thesis), syn. fide Eggers (2001). Original material: Costa Rica, Limon: Braulio Carrillo National Park, Botarrama Naturpfad, auf *Ctenitis subincisa*, 92-509; same location, auf *Salpichlaena volubilis*, 92-383; same location, auf *Heliconia* sp., 92-39; same location, auf *Welfia georgii*, 92-244, 92-588; same location, auf *Calyptrogyne condensata*, 92-422; same location, auf *Dieffenbachia longispatha*, 92-516; same location, auf *Ocotea atirrensis*, 92-540.

GUATEMALA. S. loc. (**Grolle 1966b** as *Diplasiolejeunea brachyclada*; Miller et al. 1983). ALTA VERAPAZ: Cobán municipio, Dampine, 1,260–1,440 m, *Standley 69372* (NY, F, **Reyes 1982**); Cobán, 1,550 m, *Türckheim 5074* (FI, **Reyes 1982**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., 350 m, *Türckheim 5068b* (FI, **Reyes 1982**); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tactic, 500 m, *Standley 7005* (F, **Reyes 1982**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 305* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Diplasiolejeunea* cf. *cavifolia*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers & Timm BEZ 3/18*, det. Eggers (**Eggers et al. 2004**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/4/h/1* (**Winkler 1967** as *Diplasiolejeunea brachyclada*).

***NICARAGUA.** *ATLÁNTICO SUR: Nueva Guinea municipio, road to Colonia Yolaina, 11°40′N, 84°26′W, 180–200 m, 11–12 Feb 1978, *Stevens 6378*, det. Dauphin May 2017 (MO-5238576! http://tropicos.org/specimen/90108678, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Cole 1982, 1983, both also as

Diplasiolejeunea brachyclada); S. loc., *Schäfer-Verwimp & Holz SV/H-0473/B* (**Wilson et al. 2007**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2113*, *2249*, *2253* (USJ, **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-39*, *92-244*, *92-383*, *etc.* (hb. Lücking, **Lücking 1995** as *Diplasiolejeunea robertiana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Diplasiolejeunea robertiana*). PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde, *James, J.* (US, REED, F, **Morales 1991**); Monteverde, *James* (F, **Reyes 1982**); Monteverde, 15 Jan 1965, *James, W. 40c*, det. Robinson (R, MO-5355415, **Reed and Robinson 1971** as *Diplasiolejeunea brachyclada*; **Dauphin 2005**); Monteverde, 15 Jan 1965, *James, W. 41c*, det. Robinson (R, MO-5266352, **Reed and Robinson 1971** as *Diplasiolejeunea brachyclada*; **Dauphin 2005**); Monteverde, 15 Jan 1965, *James, W. 40h* (R, **Reed and Robinson 1971** as *Diplasiolejeunea brachyclada*; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Chacón Holiday Camp to waterfall, *Holz & Schäfer-Verwimp CR 99-1171* (**Schäfer-Verwimp 2001**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Los Robles, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0473/C* (**Schäfer-Verwimp 2001**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Eggers* (hb. Eggers, **Eggers 2001**); Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. S. loc. (Eggers et al. 2004); S. loc., 970 m, *Schäfer-Verwimp & Verwimp 30738* (GOET, **Dong et al. 2012**). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30932*, *30951*, *30963* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34469/A*, *34509/A*, *34515*, *34524/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34489/A*, *34505* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30791* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 30755*, *34734/A*, *34735/A* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34150*, *34152*, *34160/B*, *34170/A* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 672 680*, *683 p.p.*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9253* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road, 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30722/A*, *30731*, *30738* (JE, **Schäfer-Verwimp 2014**); Panamá distrito, River Chagres between junction with River Pequeni and Indio, 5 Dec 1934, *Steyermark & Allen 16809 p.p.*, det. Dauphin Jun 2017 (MO-6699929!, **this publication**). VERAGUAS: Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34331* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30802/A*, *30809*, *30820*, *etc.* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea cubensis Tixier, *Bryophyt. Biblioth.* 27: 389, 1985 (Tixier 1985). Type: Cuba.

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34573 p.p.* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/D* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean.

Diplasiolejeunea eggersii Pócs, *Bryologist* 109(3): 408, 2006 (Pócs 2006a). Holotype: Costa Rica, Alajuela, Cordillera Central, between Vara Blanca and Poás Volcano, pastures with scattered trees, at 1,970 m, epiphyllous, accompanied by *Diplasiolejeunea alata*, *Microlejeunea bullata*, *Lejeunea flava*, *Drepanolejeunea lichenicola*, *D. inchoata*, *Metzgeria* sp., etc., 31 Jan 1985, *Eggers CR 1/200* (EGR, isotype hb. Eggers).

≡*Diplasiolejeunea costaricensis* J. Eggers, *Trop. Bryol.* 20: 114, 2001 (Eggers 2001), nom. inval. (ICN2018 Art. 38.1(a); no description).

COSTA RICA. S. loc. (von Konrat et al. 2010; Schäfer-Verwimp 2014). ALAJUELA: Alajuela cantón, between Varoka Blanca and Poás Volcano, 1,600–1,970 m, 30 Jan 1981, *Eggers CR 1/200* (EGR, hb. Eggers, Pócs 2006a; **Söderström et al. 2012a** as *Diplasiolejeunea costaricensis*); Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Diplasiolejeunea costaricensis*). SAN JOSÉ: S. loc., 1,600 m, *Schäfer-Verwimp & Holz SV/H-0238* (GOET, **Dong et al. 2012**; **Renner and de Lange 2020**).

PANAMA. CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30933* (JE, **Schäfer-Verwimp 2014**); S. loc., 1,670 m, *Schäfer-Verwimp & Verwimp 30933* (GOET, **Dong et al. 2012**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34599* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America.

Diplasiolejeunea grolleana Reyes Montoya, *Acta Bot. Acad. Sci. Hung.* 28(1/2): 175, 1983 (Reyes 1982). Type: Cuba.

COSTA RICA. S. loc. (Schäfer-Verwimp and Van Melick 2016; Ellis et al. 2017). SAN JOSÉ: Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

Also reported from the Caribbean, Northern South America.

Diplasiolejeunea involuta S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 320, 1968 (Winkler 1967) subsp. ***involuta***. Type (cf. Söderström and Hentschel 2023: 7): El Salvador, Santa Ana, SE-hang des C. Miramundo bei der Hazienda Montecristo, Metapan, 23 May 1962, *Winkler A/17/3* (TUB?, JE-04008786 https://je.jacq.org/JE04008786).

EL SALVADOR. S. loc. (León et al. 1998; Schäfer-Verwimp 2004; Schäfer-Verwimp and Pócs 2009; Ellis et al. 2015c; Robinson 2019). †SAN SALVADOR: S. loc., 2,350 m (Eggers 2001). Note: Eggers refers to Winkler (1967), so it is an error for Santa Ana. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,350 m, 22 May 1962, *Winkler A/17/3* (ULM, **TYPE**, **Winkler 1967**; **Morales and Gradstein 1995**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (León et al. 1998; Schäfer-Verwimp 2004; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Ellis et al. 2015c; Robinson 2019); S. loc., *Morales & Gradstein 2397* (USJ, **Kappelle 1996**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 9392* (**Dauphin 2005**); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,600 m, 4 Nov 1989, *Morales, Gradstein & Dauphin 2397* (**Morales and Gradstein 1995**); Jiménez cantón, Pejibaye, 3 de Junio, 2,600 m (Eggers 2001); S. loc., 2,500 m, *Morales & Blanco 42423* (GOET, **Dong et al. 2012**); S. loc., 25 Jan 1990, *Morales & Blanco 2412* (USJ, **Morales and Gradstein 1995**); S. loc., 6 Mar 1990, *Morales, Martén & Rodríguez 2432* (USJ, **Morales and Gradstein 1995**); S. loc., Sep 1994, *Gradstein & Mues 9684* (USJ, U, **Morales and Gradstein 1995**). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Eggers 2001); Pérez Zeledón cantón, Cerro de La Muerto, 3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0147/A* (GOET, **Schäfer-Verwimp 2001**; **Dong et al. 2012**).

PANAMA. S. loc. (Ellis et al. 2015c). BOCAS DEL TORO: S. loc., 3,200 m, *De Gracia et al. 376* (GOET, **Dong et al. 2012**).

Also reported from the Caribbean, Northern South America, Western South America.

Diplasiolejeunea johnsonii A.Evans, *Bull. Torrey Bot. Club* 39(12): 603, 1913 (Evans 1912c) var. ***johnsonii***. Type: Jamaica.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

COSTA RICA. S. loc. (Schäfer-Verwimp 2004; Schäfer-Verwimp and Pócs 2009). CARTAGO: El Guarco cantón, 3 de Junio, *Gradstein & Morales 8389* (U, USJ, **Gradstein et al. 1994**; **Kappelle 1996**); El Guarco cantón, 3 de Junio, *Gradstein 8389* (**Dauphin 2005**); Paraíso cantón, Cerro Asunción, 3,325 m, *Trujillo 55* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34513/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,370–1,480 m, *Schäfer-Verwimp & Verwimp 34372*, *34388* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34609* (JE, **Schäfer-Verwimp 2014**); NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 9°07′05′N,

82°52′40″W, 3,335 m, *Dauphin et al. 1558a* (USJ, **Dauphin et al. 2006**; Dauphin 2007).

Also reported from Mexico, the Caribbean, Western South America.

Diplasiolejeunea johnsonii var. ***mexicana*** Jovet-Ast, *Rev. Bryol. Lichénol.* 29(1/2): 39, 1960 (Jovet-Ast 1960). Type: Mexico.

EL SALVADOR. CHALATENANGO: Citalá municipio, Cayacuanca, *Winkler C/1* (**Winkler 1967**).

Also reported from Mexico, Western South America.

Diplasiolejeunea latipuensis Tixier, *Cryptog. Bryol. Lichénol.* 16(3): 230, 1995 (Tixier 1995). Type: Guyana.

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34160/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Brazil.

Diplasiolejeunea malleiformis (A.Evans) Tixier, *Bryophyt. Biblioth.* 27: 351, 1985 (Tixier 1985).

≡*Diplasiolejeunea pellucida* var. *malleiformis* A.Evans, *Bull. Torrey Bot. Club* 39(5): 215, 1912 (Evans 1912a). Type: Puerto Rico.

≡*Diplasiolejeunea pellucida* f. *malleiformis* (A.Evans) Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 175, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56802* (F, HAC, **Reyes 1982** as *Diplasiolejeunea pellucida* var. *malleiformis*); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56755* (JE, US, **Herzog 1951** as *Diplasiolejeunea pellucida* f. *malleiformis*).

EL SALVADOR. S. loc. (Reyes 1982 as *Diplasiolejeunea pellucida* var. *malleiformis*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/13/2*, *A/24/4*, *A/32/4*, *etc.* (**Winkler 1967** as *Diplasiolejeunea pellucida* var. *malleiformis*).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Diplasiolejeunea pellucida* var. *malleiformis*; **Stotler et al. 1998** as *Diplasiolejeunea pellucida* var. *malleiformis*).

Also reported from Mexico, the Caribbean, Western South America.

Diplasiolejeunea montecristensis S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 321, 1968 (Winkler 1967). Holotype: El Salvador, Santa Ana, SE-hang des C. Miramundo bei der Hazienda Montecristo, Metapan, *Winkler A/26/10* (TUB).

EL SALVADOR. S. loc. (Dauphin et al. 1998). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/16/6*, *A/17/5* (**Winkler 1967**); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,350 m, 23 May 1962, *Winkler A/26/10* (ULM, **TYPE, Winkler 1967**).

COSTA RICA. CARTAGO: Pan-American Highway km 70, *Morales* (USJ, **Dauphin et al. 1998**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

Not found outside Central America.

Diplasiolejeunea pauckertii (Nees) Steph., *Sp. Hepat. (Stephani)* 5: 924, 1916 (Stephani 1916a).

≡*Lejeunea pauckertii* Nees, *Syn. Hepat.* 3: 392, 1845 (Gottsche et al. 1845a). Type: Peru.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006).

COSTA RICA. S. loc. (Schäfer-Verwimp 2004; Dauphin 2005; Schäfer-Verwimp and Pócs 2009). CARTAGO: S. loc., 2,460 m, *Schäfer-Verwimp & Holz SV/H-0418* (GOET, **Dong et al. 2012**). LIMÓN: Talamanca cantón, Telire, Parque Internacional La Amistad, Valle del Silencio, 9°06′58.47″N, 82°57′48.08″W, 12 Sep 2019, *Estrada et al. 6783*, det. G. Dauphin Mar 2021 (CR-4467656!, **this publication**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,480–2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30893*, *30908*, *30921* (JE, **Schäfer-Verwimp 2014**); S. loc., 2,600 m, *Schäfer-Verwimp & Verwimp 30908* (GOET, **Dong et al. 2012**); S. loc., 2,600 m, *Schäfer-Verwimp & Verwimp 30921* (GOET, **Dong et al. 2012**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Cerro Fábrega, 3,335 m, 26 Mar 2004, *De Gracia et al. 338* (GOET, **Dong et al. 2012, 2013; Heinrichs et al. 2012c, 2014a, 2014b; Czumay et al. 2013; Schäfer-Verwimp et al. 2014; Bechteler et al. 2016a, 2016c; Zhu et al. 2017, 2018a, 2018b, 2019; Zhu and Shu 2018; Renner and de Lange 2020; Shu et al. 2022**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea pellucida (C.F.W.Meissn. ex Spreng.) Schiffn., *Hepat. (Engl.- Prantl)*: 121, 1893 (Schiffner 1893a).

≡*Jungermannia pellucida* C.F.W.Meissn. ex Spreng. *Syst. Veg. (ed. 16) [Sprengel]* 4(2): 325, 1827 (Sprengel 1827a). Type: India Occidentalis.

=*Diplasiolejeunea inermis* Tixier, *Bryophyt. Biblioth.* 27: 364, 1985 (Tixier 1985), syn. fide Dong et al. (2012). Type: Jamaica.

=*Diplasiolejeunea caribea* Tixier, *Bryophyt. Biblioth.* 27: 377, 1985 (Tixier 1985), syn. fide Gradstein (2021). Type: Guadeloupe.

GUATEMALA. S. loc. (Lücking 1995; Bastos 2004; Schäfer-Verwimp 2004 as *Diplasiolejeunea inermis*). ALTA VERAPAZ: Cobán municipio, Dampine, 1,260–1,440 m, *Standley 69372* (NY, F, **Reyes 1982**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tactic municipio, SE of Tactic, 1,500 m, *Standley 10005* (F, **Reyes 1982**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal,

Freire et al. 69, *101*, *146*, *459*, *465*, *523*, *526* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., *Pérez 1405* (USCG, Pérez 2009). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

HONDURAS. S. loc. (Jovet-Ast 1957; Lücking 1995; Oliveira-e-Silva and Yano 2000; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54812*, *54936*, *56249*, *etc.* (JE, F, HAC, S, **Herzog 1951**; **Reyes 1982**; **Tixier 1985**).

EL SALVADOR. S. loc. (Reyes 1982; Miller et al. 1983; Lücking 1995; Bastos 2004). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/19/4*, *A/21/2*, *A/26/6*, *etc.* (**Winkler 1967**).

COSTA RICA. S. loc. (Pagán 1939c; Jovet-Ast 1957; Cole 1982, 1983; Fulford 1987 as *Diplasiolejeunea pellucida* var. *pellucida*; Fulford and Sharp 1990; Gradstein and Costa 2003 as *Diplasiolejeunea inermis*; Bastos 2004; Schäfer-Verwimp 2004 as *Diplasiolejeunea inermis*; Dauphin 2005 as *Diplasiolejeunea inermis*); S. loc., *Standley 44690* (JE, **Zwickel 1932**); S. loc., *Standley 46485* (JE, **Zwickel 1932**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2188*, *2250 p.p.* (USJ, **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Refugio de Fauna Silvestre de Tapanti, 1,400 m, *Eggers* (hb. Eggers, **Eggers 2001**); Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001**); Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/5* (**Eggers et al. 2001**). GUANACASTE: Caribbean slope N of Tenorio, 500 m, 3 Feb 1985, *Eggers CR 3/49* (**Eggers et al. 2001**); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**); Tilarán cantón, Arenal, Naranjos Agrios (JE, **Reyes 1982**). HEREDIA: Rancho Flores forest, *Pittier 6041 p.p.* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 49802* (JE, **Herzog 1951**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, *Standley 51980 p.p.* (JE, **Zwickel 1932**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Herzog 1951**); San Isidro cantón, Yerba Buena (JE, **Reyes 1982**; **Morales 1991**; Eggers 2001); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49802 p.p.* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 22–28 Feb 1926, *Standley 49709a* (JE, **Zwickel 1932**; **Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Caribbean slope 5 km above San Miguel, 850 m, 30 Jan 1985, *Eggers CR 2/70*, det. Pócs (EGR, **Eggers et al. 2001**); Sarapiquí cantón, Puerto Viejo, 100 m, *Eggers*, det. Pócs (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005 as *Diplasiolejeunea inermis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-23*, *91-24*, *91-25*, *etc.* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-34* (hb. Lücking, **Lücking 1995** as *Diplasiolejeunea inermis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** also as *Diplasiolejeunea inermis*); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Buenos Aires cantón, Cobagra, *Fernández 16502*, *16503*, *16506* (G, **Reyes 1982**); Buenos Aires cantón, Talamanca, *Tonduz 15882* (FI, **Reyes 1982**; **Morales 1991**; **Dauphin 2005**); Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde, 15 Jan 1965, *James, W. 40h*, det. Dauphin Jun 2017 (MO-5267127!, **this publication**); Osa cantón, Santo Domingo de Golfo Dulce, *Pittier 15572*, *15597*, *15599*, *15602*, *15603* (FI, **Reyes 1982**; **Morales 1991**; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Général (**Tonduz 1896**); Pérez Zeledón cantón, El General forest, 2,000–2,400 m, *Pittier 6054 p.p.* (**Stephani 1893c**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Jovet-Ast 1957; Lücking 1995; Stotler et al. 1998 as *Diplasiolejeunea pellucida* var. *pellucida*; Oliveira-e-Silva and Yano 2000). BOCAS DEL TORO: Bocas del Toro distrito, Salt Creek, 9°13′16.9″N, 82°13′03.0″W, 0 m, 16 Aug 2017, *Dauphin 4627*, det. Dauphin Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Salt Creek, Long Beach Trail, Aug 2017, *Dauphin et al. 4640*, *4642* (PMA, **this publication**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30982/A* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30936/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021** as *Diplasiolejeunea caribea*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34517* (JE, **Schäfer-Verwimp 2014** as *Diplasiolejeunea caribea*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34489/C* (JE, **Schäfer-Verwimp 2014** as *Diplasiolejeunea*

caribea); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34445/A* (JE, **Schäfer-Verwimp 2014**); S. loc., 1,670 m, *Schäfer-Verwimp & Verwimp 30936/A* (GOET, **Dong et al. 2012**; **Zhu et al. 2017, 2018a, 2018b, 2019**; **Zhu and Shu 2018**; **Shu et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30769*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, *Schäfer-Verwimp & Verwimp 34147/A*, *34171/A* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 676*, *684*, *685*, *686*, *etc.* (PMA, **Sierra et al. 2019a** also as *Diplasiolejeunea caribea*). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Diplasiolejeunea pellucida* var. *pellucida*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, between Pirre 1 and Pirre 2, *Salazar Allen & Gradstein 9235 p.p.* (PMA, **Stotler et al. 1998** as *Diplasiolejeunea pellucida* var. *pellucida*); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998** as *Diplasiolejeunea pellucida* var. *pellucida*; **Dauphin et al. 2022**). PANAMA: Panamá distrito, Cerro Jefe, 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30729*, *30730* (JE, **Schäfer-Verwimp 2014** as *Diplasiolejeunea caribea*).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 467*, *470*, *624*, *689* (hb. Bernecker, **Bernecker-Lücking 2000** as *Diplasiolejeunea inermis*); Colnett, 200–250 m, Apr 1992, *Lücking 455*, *625*, *704* (USJ, **Bernecker-Lücking 2000** as *Diplasiolejeunea inermis*); Cuenca de la Quebrada Alfaro, rumbo a Bahía Yglesias, 5°31′8.4″N, 87°03′14.9″W, 266 m, *Estrada et al. 6168*, det. G. Dauphin Apr 2021 (CR-4468360!, **this publication**); Cuenca de la Quebrada Pittier, rumbo a Bahía Yglesias, 5°31′81.5″N, 87°03′32.3″W, 285 m, 29 Nov 2013, *Estrada et al. 6165*, det. G. Dauphin May 2021 (CR-4468355!, **this publication**); Cuenca de la Quebrada Pittier, rumbo a Bahía Yglesias, 5°31′81.5″N, 87°03′32.3″W, 285 m, 29 Nov 2013, *Estrada et al. 6166*, det. G. Dauphin Apr 2021 (CR-4468357!, **this publication**); Fila entre Bahía Wafer y Chatham, sobre ladera que va hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, *Estrada et al. 6138*, det. G. Dauphin Jul 2021 (CR-4468342!, **this publication**); Fila entre Bahía Wafer y Chatham, sobre ladera que va hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, 26 Nov 2013, *Estrada et al. 6137*, det. G. Dauphin Apr 2021 (CR-4468340!, **this publication**); S. loc., *Pittier* (G-00047702 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=159230&lang=en, **Evans 1912a**); S. loc., Jun 2016, *Sánchez 2760*, det. Dauphin 2016 (CR!, **this publication**); Yglesias A, 50–100 m, Apr 1992, *Lücking 326*, *558*, *629*, *630*, *671*, *680*, *681* (ULM, **Bernecker-Lücking 2000** as *Diplasiolejeunea inermis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea pluridentata Schäf.-Verw., *Haussknechtia* 8: 71, 2001 (Schäfer-Verwimp 2001). Holotype: Costa Rica, San José, Dota, San Gerardo, Los Robles, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/ H-0486b* (JE-04002281 https://je.jacq.org/JE04002281, isotypes in EGR, CR).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Nöske et al. 2003; **Schäfer-Verwimp 2004**, 2014; Gradstein and Uribe 2016; Gradstein 2021). SAN JOSÉ: Dota cantón, Chacón Holiday Camp to waterfall, *Holz & Schäfer-Verwimp CR 99-1171* (**Schäfer-Verwimp 2001**; **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, Los Robles, 12 Jun 1999, *Holz CR 99-837* (GOET, CR, **Schäfer-Verwimp 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, Los Robles, 2,330 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/ H-0473/H* (**Schäfer-Verwimp 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/B* (**TYPE**, **Schäfer-Verwimp 2001**; **Kis 2004**; **Dauphin 2005**); La Quebrada, *Schäfer-Verwimp & Holz SV/H-0253* (CR, **Schäfer-Verwimp 2001**; **Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Schäfer-Verwimp & Holz SV/H-0071b* (**Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0147/B* (GOET, **Schäfer-Verwimp 2001**; **Dauphin 2005**; **Dong et al. 2012**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 2,050 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31015* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34489/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Western South America.

****Diplasiolejeunea pocsii*** Reyes Montoya, *Acta Bot. Acad. Sci. Hung.* 28(1/2): 173, 1983 (Reyes 1982). Type: Cuba.

***COSTA RICA.** S. loc., *Wilbraham 300* (BM, **this publication**); S. loc., *Wilbraham 310* (BM, **this publication**). *PUNTARENAS: Buenos Aires cantón, Cordillera de Talamanca, Cerro Hoffmann (on the Pacific/Caribbean divide), 2,574 m, 9°5.819′N, 82°58.687′W, 18 Feb 2012, *Wilbraham CR12-302*, det. G. Dauphin Sep 2020 (CR-5152110!, **this publication**).

Also reported from the Caribbean, Western South America.

Diplasiolejeunea replicata (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 926, 1916 (Stephani 1916a).

≡*Lejeunea replicata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 302, 1884 (Spruce 1884). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Schäfer-Verwimp 2004; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014). CARTAGO: Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 9 Nov 1999, *Holz CR 99-608* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); El Guarco cantón, 3 de Junio, 2,460 m, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0426*, *SV/H-0454/B* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/D* (EGR, CR, JE, **Schäfer-Verwimp 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, "Los Robles," 2,100 m, 28 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0246/C* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**; **Dong et al. 2012**); Dota cantón, San Gerardo, "Los Robles," 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0246/C* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**); Dota cantón, San Gerardo, Río Savegre Valley, 1,950 m, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0053/B* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,300 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0179/B* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,880 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30983* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,480–2,750 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30894*, *30899*, *30900*, *30909*, *30919* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30920* (JE, **Schäfer-Verwimp 2014**); S. loc., 1,880 m, *Schäfer-Verwimp & Verwimp 30983* (GOET, **Dong et al. 2012**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Diplasiolejeunea unidentata (Lehm. et Lindenb.) Schiffn., *Bot. Jahrb. Syst.* 23(5): 583, 1897 (Schiffner 1897).

≡*Jungermannia unidentata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 48, 1834 (Lehmann 1834). Type: St. Vincent.

=*Diplasiolejeunea rudolphiana* Steph., *Hedwigia* 35(3): 79, 1896 (Stephani 1896), syn. fide Gradstein (2021). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Diplasiolejeunea rudolphiana*). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Diplasiolejeunea rudolphiana*). EL PETÉN: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Diplasiolejeunea rudolphiana*). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1450* (USCG, **Pérez 2009** as *Diplasiolejeunea rudolphiana*). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Diplasiolejeunea rudolphiana*).

BELIZE. S. loc. (**Fulford 1938** as *Diplasiolejeunea rudolphiana*; Schuster 1956b, 1980d, both as *Diplasiolejeunea rudolphiana*; Jovet-Ast and Tixier 1962 as *Diplasiolejeunea rudolphiana*; Whittemore and Allen 1996 as *Diplasiolejeunea rudolphiana*; Zhu and So 2001 as *Diplasiolejeunea rudolphiana*). *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 940 m, 19 Feb 1997, *Allen 18953*, det. Dauphin Jun 2017 (MO-5228072!, **this publication**); Punta Gorda, Feb 1933, *White 110*, det. Fulford 1937 (MO-5375419!, **this publication**); Punta Gorda, Feb 1933, *White 82*, det. Fulford 1937 (MO-5247341!, **this publication**).

HONDURAS. S. loc. (Frye and Clark 1947 as *Diplasiolejeunea rudolphiana*; Fulford et al. 1970; Bastos 2004 as *Diplasiolejeunea rudolphiana*); S. loc., *Herzog* (JE, **Reyes 1982** as *Diplasiolejeunea rudolphiana*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55354 p.p.* (**Herzog 1951** as *Diplasiolejeunea rudolphiana*; **Reyes 1982** as *Diplasiolejeunea rudolphiana*); Tela municipio, Lancetilla, *Standley 5536/a* (F, **Reyes 1982** as *Diplasiolejeunea rudolphiana*). CORTÉS: San Francisco de Yojoa municipio, Rio Lindo, *Morton 7879* (F, **Reyes 1982** as *Diplasiolejeunea rudolphiana*).

EL SALVADOR. S. loc. (Reyes 1982; Bastos 2004). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/6/d/4* (**Winkler 1967**).

***NICARAGUA.** *BOACO: Camoapa municipio, 5 km N of El Zancudo empalme, road from Cuapa to Camoapa, 12°20′02″N, 85°23′57″W, 535 m, 10 Dec 2012, *Stevens 33360 p.p.*, det. Dauphin May 2017 (MO-6699937! http://tropicos.org/specimen/100988177, **this publication**).

COSTA RICA. ALAJUELA: Grecia, 700 m (Eggers 2001); Río Cuatre cantón, Laguna Hule, 700 m, *Dauphin & Gonzáles 2145* (CR, USJ, **Dauphin et al. 1998**; **Dauphin 2005**). CARTAGO: Turrialba cantón, CATIE, *Bayer 2220 p.p.* (**Dauphin 2005** as *Diplasiolejeunea rudolphiana*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 700 m, 27 Aug 2003, *Dauphin et al. 3346.3* (CR, **Dauphin and Grayum 2005** as *Diplasiolejeunea rudolphiana*, **Dauphin 2005** as *Diplasiolejeunea rudolphiana*); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014 also as *Diplasiolejeunea rudolphiana*); S. loc. (G, Stephani 1916a as *Diplasiolejeunea rudolphiana*; Frye and Clark 1947 as *Diplasiolejeunea rudolphiana*; Schuster 1956b, 1980d as *Diplasiolejeunea rudolphiana*; Jovet-Ast and Tixier 1962 as *Diplasiolejeunea rudolphiana*; **Reyes 1982** as *Diplasiolejeunea rudolphiana*; Fulford 1987 as *Diplasiolejeunea rudolphiana*; **Stotler et al. 1998** as *Diplasiolejeunea rudolphiana*; Zhu and So 2001 as *Diplasiolejeunea*

rudolphiana; Bastos 2004 as *Diplasiolejeunea rudolphiana*). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30964* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** also as *Diplasiolejeunea rudolphiana*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34469/B*, *34513/C* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350 m, *Schäfer-Verwimp & Verwimp 34342*, *34351/E*, *34364*, det. A. Schäfer-Verwimp (**Schäfer-Verwimp 2014** as *Diplasiolejeunea rudolphiana*). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34170* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34171/C* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 725* (PMA, Sierra et al. 2019a). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Diplasiolejeunea rudolphiana*); Cerro Pirre, between Pirre 1 and Pirre 2, 50 m, *Salazar Allen & Gradstein 9204* (PMA, **Stotler et al. 1998** as *Diplasiolejeunea rudolphiana*); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Diplasiolejeunea rudolphiana*); S. loc. (Schäfer-Verwimp 2014 as *Diplasiolejeunea rudolphiana*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 2*, *36*, *8* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado Island, Zetek Trail, 7 Jan 1950, *Arzeni*, det. Dauphin Jun 2017 (MO-6626555!, **this publication**). PANAMA: Panamá distrito, Canal Zone Forest Preserve, Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Diplasiolejeunea rudolphiana*; **Stotler et al. 1998** as *Diplasiolejeunea rudolphiana*). VERAGUAS: S. loc., 850 m, *Schäfer-Verwimp & Verwimp 30843* (GOET, **Dong et al. 2012** as *Diplasiolejeunea rudolphiana*); Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34280*, *34282/A* (JE, **Schäfer-Verwimp 2014** as *Diplasiolejeunea rudolphiana*); Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34330/C* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30798* (JE, **Schäfer-Verwimp 2014** as *Diplasiolejeunea rudolphiana*); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30814*, *30822*, *30843*, *30851*, *30860* (JE, **Schäfer-Verwimp 2014**).

Also reported from Western Indian Ocean, China, Indian Subcontinent, Indo-China, Malesia, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

***Diplophyllum* (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 15, 1835 (Dumortier 1835).**

Diplophyllum obtusatum (R.M.Schust.) R.M.Schust., *Hepat. Anthocer. N. Amer.* 3: 215, 1974 (Schuster 1974).

≡*Diplophyllum apiculatum* var. *obtusatum* R.M.Schust., *Amer. Midl. Naturalist* 49(2): 432, 1953 (Schuster 1953). Type: USA, Minnesota.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, 2005, *Pérez 71* (USCG, Pérez 2006, **2009**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**); S. loc. (Engel and Smith Merrill 1998; Gradstein et al. 2001b; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2019; Gradstein 2021). CARTAGO: Reserva Forestal de Río Macho, 9°40′50″N, 83°58′50″W, 2 Nov 1995, *Dauphin 2088* (CR, MO, **Dauphin 2005**); Reserva Forestal Río Macho, 2,500 m, *Gradstein & Morales 9385* (CR, U, USJ, **Gradstein et al. 1994**; **Kappelle 1996**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Rivas, Chirripó National Park, Fila Cementerio de La Máquina, *Dauphin et al. 3591* (CR!, **this publication**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Canada, North-Central USA, Southeastern USA, the Caribbean, Northern South America, Western South America.

***Drepanolejeunea* (Spruce) Steph., *Hedwigia* 30(5): 209, 1891 (Stephani 1891a).**

Drepanolejeunea aculeata Bischl., *Rev. Bryol. Lichénol.* 33(1/2): 68, 1964 (Bischler 1964). Type: Brazil.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006 as *Drepanolejeunea* cf. *aculeata*). Note: We are not aware of any positively identified specimen from Alta Verapaz. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 800 m, 5 Jul 2007, *Norris 110002f* (UC, **Norris et al. 2017**).

Also reported from Western South America, Brazil.

Drepanolejeunea andina Herzog, *Svensk Bot. Tidskr.* 51(1): 196, 1957 (Herzog 1957b). Type: Ecuador.

COSTA RICA. S. loc. (Gradstein 2021). SAN JOSÉ: Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, 9°34′N, 83°45′W, 3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0149/B*, *SV/H-0179/A* (CR, JE, **Ellis et al. 2018b**).

Also reported from Northern South America, Western South America.

Drepanolejeunea anoplantha (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 325, 1913 (Stephani 1913).

≡*Lejeunea anoplantha* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 189, 1884 (Spruce 1884). Type: Peru.

=*Drepanolejeunea subulata* Steph., *Hedwigia* 35(3): 83, 1896 (Stephani 1896), syn. fide Bischler (1964). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 509* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, quebrada Las Huertas, 2,030 m, 12 Nov 2014, *Búcaro H305* (MHES!, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014). ALAJUELA: Poás Volcano, 17 Jan 1972, *Morales & Lacayo 506* (USJ, **Morales and Griffin 1983** as *Drepanolejeunea subulata*; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34558/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea appalachiana R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 83(4): 219, 1967 (Schuster 1967). Type: USA.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

Also reported from Southeastern USA, the Caribbean.

Drepanolejeunea araucariae Steph., *Hedwigia* 35(3): 80, 1896 (Stephani 1896) var. ***araucariae***. Type: Brazil.

=*Drepanolejeunea elegantissima* Steph., *Sp. Hepat. (Stephani)* 5: 331, 1913 (Stephani 1913), syn. fide Bischler (1964). Lectotype (Bischler 1964: 129 as "type"): Guatemala, s.d., s. coll., s.n., ex hb. Jack, in hb. G (G-00069287).

GUATEMALA. S. loc. (**TYPE** of *Drepanolejeunea elegantissima*, **Stephani 1913** as *Drepanolejeunea elegantissima*; **Bischler 1964**; **Bonner 1965** as *Drepanolejeunea elegantissima*; Winkler 1967, Schuster 1996a; Bastos 2004; Schäfer-Verwimp and Pócs 2009). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 135* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Drepanolejeunea* cf. *araucariae*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). *CHIMALTENANGO: Acatenango municipio, Volcán Acatenango road Parramos to Yepocapa, above Chichoy Bajo, ~8.65 km W of San Miguel Dueñas, 14°32′20.8″N, 90°52′35.9″W, 9 Dec 2013, *Quedensley 13020*, det. Dauphin Sep 2017 (MO, W-0089059!, **this publication**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

EL SALVADOR. AHUACHAPÁN: Tacuba, *Winkler* (**Winkler 1967**). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/32/8/6*, *A/32/ß/2* (**Winkler 1967**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,350–2,750 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30887*, *30904/A*, *30910* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

****Drepanolejeunea aurita*** Bischl., *Rev. Bryol. Lichénol.* 33(1/2): 146, 1964 (Bischler 1964). Type: Colombia.

***PANAMA.** *BOCAS DEL TORO: Cerro Fábrega, 9°05′45″N, 82°53′10″W, 12 Feb 1995, *Dauphin 1553A*, det. Dauphin Oct 2020 (CR-1578118!, **this publication**).

Also reported from Western South America.

Drepanolejeunea bidens (Prantl) A.Evans, *Bull. Torrey Bot. Club* 30(1): 29, 1903 (Evans 1903a).

≡*Lejeunea bidens* Prantl, *Hedwigia* 29: xiv, 1890 (Prantl 1890). Type: Peru.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006 as *Drepanolejeunea* cf. *bidens*). Note: We are not aware of any positively identified specimen from Alta Verapaz. ?EL PROGRESO: S. loc., 2007, *Pérez* (USCG, Barillas de Klee et al. 2008 as *Drepanolejeunea* cf. *bidens*), Note: We are not aware of any positively identified specimen from El Progreso. ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (**Fulford 1938**; Frye and Clark 1947; Jovet-Ast 1960; Bischler 1964; Whittemore and Allen 1996).

***HONDURAS.** S. loc. (Winkler 1967; Fulford and Sharp 1990). *OLANCHO: Catacamas municipio, Sierra de Algalta, Montaña Babilonia, 13 km NNW of Catacamas, 14°57′N, 85°55′W, 2,354 m, 2 Jun 1992, *Allen 12726*, det. Dauphin Jun

2017 (MO-5228038! http://tropicos.org/specimen/90102213, **this publication**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/2/1*, *A/22/3*, *A/22/4*, *etc.* (**Winkler 1967**).

NICARAGUA. S. loc. (Winkler 1967). ATLÁNTICO SUR: Decembocadura Río Grande municipio, Karawala River, *Hamilton* (YU, **Bischler 1964**).

COSTA RICA. S. loc. (Winkler 1967). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, ridge above Playa Respingue, 650–700 m, 27 Aug 2003, *Dauphin et al. 3317* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Reserva Biológica Santa Elena, 10°20′N, 84°48′W, 26 Mar 1992, *Lyon 546 p.p.*, det. Dauphin Jun 2017 (MO-6699949!, **this publication**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, Sillett et al. 1995 as *Drepanolejeunea* cf. *bidens*); S. loc. (Merwin et al. 2001 as *Drepanolejeunea* cf. *bidens*).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Jovet-Ast 1960; Bischler 1964; Winkler 1967). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,110 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30870* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30934/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34389/A*, *34427/B*, *34512/B*, *34524/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34665* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34759/B* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34138/B* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31059*, *31060/C* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9249* (PMA, Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; Stotler et al. 1998; **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30812*, *34329* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea biocellata A.Evans, *Bull. Torrey Bot. Club* 30(1): 22, 1903 (Evans 1903a). Type: Puerto Rico.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (Pérez 2006 as *Drepanolejeunea* cf. *biocellata*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 523a* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

HONDURAS. S. loc. (Winkler 1967). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56810 p.p.* (JE, US, **Zwickel 1932**; **Herzog 1951**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/24/2A/30/1*, *A/24/5*, *A/31/4*, *A/32/1*, *B/2/c/3*, *B/4/a/2*, *B/4/f/2* (**Winkler 1967**).

COSTA RICA. S. loc. (Cole 1982, 1983). PUNTARENAS: Monteverde (Morales 1991); Monteverde, 15 Jan 1965, *James, W. 40i* (R, MO-5378085, **Reed and Robinson 1971**; **Dauphin 2005**); Monteverde, 15 Jan 1965, *James, W. 41a* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Acosta cantón, El Cornelio, 1,350 m, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea campanulata (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 328, 1913 (Stephani 1913).

≡*Lejeunea campanulata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 192, 1884 (Spruce 1884). Type: Ecuador.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/11/3*, *A/26/4*, *B/2/c/1*, *B/3/β/5*, *B/4/c/2*, *B/6/c/6* (**Winkler 1967**).

COSTA RICA. GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Río Blanco, 700 m, *Morales 2441* (**Dauphin 2005**); Liberia cantón, Rincón de La Vieja National Park, Río Blanco, 700 m, 24 Apr 1994, *Obando* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

PANAMA. †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This must refer to the "new" comarca Naso Tjër Di.

CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30991* (JE, **Schäfer-Verwimp 2014**). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 129* (PMA, **Dauphin 2007**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30807/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

*****Drepanolejeunea crassiretis*** A.Evans, *Bull. Torrey Bot. Club* 30(1): 25, 1903 (Evans 1903a). Type: Puerto Rico.

?GUATEMALA. ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Drepanolejeunea* aff. *crassiretis*).

***COSTA RICA.** *PUNTARENAS: Coto Brus, San Vito, Fila Cruces, 8°57′20″N, 83°04′20″W, 8 Jun 1995, *Dauphin & Chacón 1757*, det. G. Dauphin Oct 2020 (CR-1577815!, **this publication**).

Previously only reported with doubt from Central America but here confirmed. Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea crucianella (Taylor) A.Evans, *Bull. Torrey Bot. Club* 30(1): 33, 1903 (Evans 1903a).

≡*Lejeunea crucianella* Taylor, *London J. Bot. 5*: 393, 1846 (Taylor 1846a). Type: Guyana.

=*Drepanolejeunea trifida* Steph., *Sp. Hepat. (Stephani) 5*: 340, 1913 (Stephani 1913), syn. fide Bischler (1964). Type: Suriname.

HONDURAS. S. loc. (Ilkiu-Borges 2000; Ilkiu-Borges and Lisbôa 2002b; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, Dec 1927–Mar 1928, *Standley 55622 p.p.* (JE, **Herzog 1951; Bischler 1964**).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Ilkiu-Borges and Lisbôa 2002b; Bastos 2004). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 1810* (**Morales 1991; Dauphin 2005**). LIMÓN: Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48775a* (**Morales 1991**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48775a* (**Herzog 1951** as *Drepanolejeunea trifida*; **Bischler 1964**; **Dauphin 2005**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30771* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34263/B* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Darién. ?PANAMA: Panamá distrito, Cerro Jefe, *Spörle 5243b* (PMA, Spörle 1990 as *Drepanolejeunea* cf. *crucianella*); Panamá distrito, Cerro Jefe, along creek of Río San Cristóbal, *Salazar Allen et al. 5243* (PMA, Stotler et al. 1998 as *Drepanolejeunea* cf. *crucianella*). Note: We are not aware of any positively identified specimen from Panama province.

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 965* (USJ, **Dauphin 1995, 1999, 2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, Jun 2016, *Sánchez*, det. Dauphin Aug. 2016 (CR!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 517* (USJ, **Bernecker-Lücking 2000**); Yglesias D, 350–500 m, Apr 1992, *Lücking 583*, *584*, *587*, *642* (USJ, **Bernecker-Lücking 2000**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea dissitifolia A.Evans, *Bull. Torrey Bot. Club* 30(1): 28, 1903 (Evans 1903a). Type: Puerto Rico.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/1/h/3*, *B/2/e/γ/5*, *etc.* (**Winkler 1967**).

PANAMA. DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, *Salazar Allen & Gradstein 9236* (PMA, **Stotler et al. 1998**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

Also reported from the Caribbean, Northern South America, Brazil.

Drepanolejeunea evansii Bischl., *Rev. Bryol. Lichénol.* 35(1/4): 136, 1967 (Bischler 1967b).

≡*Drepanolejeunea evansii* Bischl., *Rev. Bryol. Lichénol.* 33(1/2): 75, 1964 (Bischler 1964), nom. inval. (ICN2018 Art. 39.1; no Latin description). Type: Puerto Rico.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). SAN MARCOS: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/29/1*, *B/4/d/8* (**Winkler 1967**).

Also reported from the Caribbean, Northern South America, Western South America.

Drepanolejeunea fragilis Bischl., *Rev. Bryol. Lichénol.* 35(1/4): 137, 1967 (Bischler 1967b).

≡*Drepanolejeunea fragilis* Bischl., *Rev. Bryol. Lichénol.* 33(1/2): 123, 1964 (Bischler 1964), nom. inval. (ICN2018 Art. 39.1; no Latin description). Type: Puerto Rico.

GUATEMALA. S. loc. (Fulford et al. 1970). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,100–2,360 m, *Pérez* (**Pérez 2006**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/32/δ/7* (**Winkler 1967**).

COSTA RICA. S. loc. (Fulford et al. 1970; Schäfer-Verwimp 2014). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3323* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). PUNTARENAS: Osa cantón, Península de Osa, Boscosa, 150 m, *Gradstein & Dauphin 9303a* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This must refer to the "new" comarca Naso Tjër Di. COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34163/B* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/F* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31035* (JE, **Schäfer-Verwimp 2014**). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 146* (PMA, **Dauphin 2007**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30806* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea granatensis (Prantl) Bischl., *Rev. Bryol. Lichénol.* 33(1/2): 150, 1964 (Bischler 1964).

≡*Lejeunea granatensis* Prantl, *Hedwigia* 31: xvii, 1892 (Prantl 1892). Type: Colombia.

COSTA RICA. SAN JOSÉ: Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, 9°34′N, 83°45′W, 3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0142*, *SV/H-0149/C*, *SV/H-0165* (CR, JE, **Ellis et al. 2019c**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Drepanolejeunea hamulata Steph., *Sp. Hepat. (Stephani)* 5: 331, 1913 (Stephani 1913). Lectotype: Cuba.

COSTA RICA. S. loc. (**Stephani 1913**; Bonner 1965). CARTAGO: Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15571* (M, YU, NY, **Zwickel 1932**).

Also reported from the Caribbean.

Drepanolejeunea inchoata (C.F.W.Meissn.) Steph., *Primit. fl. costar.*: 115, 1893 (Stephani 1893c) var. ***inchoata***.

≡*Jungermannia inchoata* C.F.W.Meissn., *Nov. Stirp. Pug.* 5: 19, 1833 (Lehmann 1833). Type: Caribbean Islands.

GUATEMALA. S. loc. (Fulford 1987). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 523b* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

EL SALVADOR. S. loc. (Lücking 1995). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/10/1*, *A/10/4*, *A/11/4*, *etc.* (**Winkler 1967**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Evans 1903a; Pagán 1942b; Jovet-Ast 1957; Bischler 1964; Winkler 1967; Fulford 1987; Fulford and Sharp 1990). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**); Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Isidro cantón, Cerro de Caricias, *Standley 51980 p.p.* (JE, **Zwickel 1932**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Zwickel 1932**; **Herzog 1951**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988a* (JE, **Bischler 1964**); San Isidro cantón, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 51980 p.p.* (JE, US, **Bischler 1964**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, 22–28 Feb 1926, *Standley 33146a* (JE, **Zwickel 1932**; **Bischler 1964**; **Morales 1991**); San Isidro cantón, Yerba Buena, 22–28 Feb 1926, *Standley 49709a* (JE, **Herzog 1951**; **Bischler 1964**; **Morales 1991**; **Dauphin 2005**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-36*, *92-212*, *92-335*, *etc.* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, trail from Cerro Amigos to Canadian Research Station, 10°18′N, 84°48′W, 27 Feb 1992, *Lyon 106*, det. Dauphin Jun 2017 (MO-4411683!, **this publication**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Général (**Tonduz 1896**); Moravia cantón, La Palma, ~1,600 m, *Standley 33146 p.p.* (S, **Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, 3 Feb 1924, *Standley* (S, **Bischler 1964**); Pérez Zeledón cantón, El General forest, *Pittier 6002*, *6052*, *6053* (G, **Stephani 1893c**; **Morales 1991**; **Dauphin**

2005); Tarrazú cantón, La Palma Forest, Feb 1891, *Pittier 6002* (G-5273, **Bischler 1964**).

PANAMA. S. loc. (Lücking 1995). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30978* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,750 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30901* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30939/A*, *30950*, *30968* (JE, **Schäfer-Verwimp 2014**); Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34575/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et a. 2020**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30744* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34117* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34259/B*, *34262/B*, *34263/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *663*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, *Salazar Allen & Gradstein 9284* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34304/A*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30807/A* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 517* (ULM, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 536* (USJ, **Bernecker-Lücking 2000**); S. loc. (Miller et al. 1983; Dauphin 1995, 1999; Lücking 1995); S. loc., 50 m, 1902, *Pittier* (G, Bischler 1964); Yglesias A, 50–100 m, Apr 1992, *Lücking 563* (hb. Bernecker, **Bernecker-Lücking 2000**); Yglesias C, 250–350 m, Apr 1992, *Lücking 580* (USJ, **Bernecker-Lücking 2000**).

Also reported from the Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea infundibulata (Spruce) A.Evans, *Bull. Torrey Bot. Club* 30(1): 35, 1903 (Evans 1903a).

≡*Lejeunea infundibulata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 191, 1884 (Spruce 1884). Type: Ecuador.

=*Drepanolejeunea bidens* (Prantl) A.Evans f. *denticulata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 145, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Bischler (1964). Original material (see also Bischler 1964 as "type"): Costa Rica, Heredia, Yerba Buena, Standley 49709 p.p. (JE-04010818 https://je.jacq.org/JE040010818).

EL SALVADOR. S. loc. (Lücking 1995). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/31/4* (**Winkler 1967**).

COSTA RICA. S. loc. (Fulford 1987; Fulford and Sharp 1990). CARTAGO: Paraíso cantón, Refugio de Fauna Silvestre de Tapanti, 1,400 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Isidro cantón, Cerro de Caricias, *Standley 49788a* (JE, **Zwickel 1932**; **Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 49802* (JE, **Zwickel 1932**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Zwickel 1932**; **Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, *Pittier 6053* (BM, **Morales 1991**); San Isidro cantón, Yerba Buena, *Standley 49709 p.p.* (JE, **TYPE** of *Drepanolejeunea bidens* f. *denticulata*, **Herzog 1951** as *Drepanolejeunea bidens* f. *denticulata*, **Bischler 1964**; **Bonner 1965** as *Drepanolejeunea bidens* f. *denticulata*; **Morales 1991**; **Dauphin 2005**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Dauphin 2967 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-66*, *91-68*, *91-70*, *etc.* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Dota cantón, San Gerardo, Los Robles, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0473/C* (**Schäfer-Verwimp 2001**); La Quebrada, *Schäfer-Verwimp & Holz SV/H-0253* (CR, **Schäfer-Verwimp 2001**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea integerrima Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 146, 1951 (Herzog 1951). Type: Honduras, Atlántida, Lancetilla Valley, near Tela, Dec 1927–Mar 1928, *Standley 56755 p.p.* (US-04659783 http://n2t.net/ark:/65665/38261d299-4865-46b1-afaf-488afb77377e).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56755 p.p.*, *56807* (US, JE, **Bischler 1964**; **Bonner 1965**; **Herzog 1951**, **TYPE**).

Not found outside Central America.

Drepanolejeunea lichenicola (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 335, 1913 (Stephani 1913).

≡*Lejeunea lichenicola* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 191, 1884 (Spruce 1884). Type: Ecuador.

=*Drepanolejeunea bispinulosa* A.Evans., *Bull. Torrey Bot. Club* 30(1): 32, 1903 (Evans 1903a), syn. fide Bischler (1964). Type: Puerto Rico.

GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Drepanolejeunea* cf. *lichenicola*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 459* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

EL SALVADOR. S. loc. (Lücking 1995; Schäfer-Verwimp 1999; Schäfer-Verwimp and Pócs 2009). CHALATENANGO: San Ignacio municipio, Cerro el Pittal, *Winkler C/2* (**Winkler 1967**). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/20/1*, *A/22/5*, *A/26/9*, *etc.* (**Winkler 1967**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Winkler 1967; Jovet-Ast 1957 as *Drepanolejeunea bispinulosa*; van Zanten and Gradstein 1987; Fulford and Sharp 1990; Gradstein and Schäfer-Verwimp 1999; Holz 2005; Schäfer-Verwimp and Pócs 2009). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**); Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). *CARTAGO: El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0467B*, det. Dauphin Jun 2017 (MO-5271173!, **this publication**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); San Rafael cantón, road between San Rafael and Rio Las Vueltas, Rio Patria above bridge, 10°05′N, 84°04′W, 4 Sep 1979, *Stevens 13943*, det. Whittemore Aug 1990 (MO-3674642!, **this publication**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-342*, *92-430*, *92-434*, *92-473* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Acosta cantón, El Cornelio, 1,350 m, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/B* (**Schäfer-Verwimp 2001**); Moravia cantón, La Palma, 1,600 m, *Standley 37971a* (JE, S, **Herzog 1951** as *Drepanolejeunea bispinulosa*); Moravia cantón, La Palma, 500–2,500 m, 17 Mar 1924, *Standley 37971 p.p.* (JE, S, **Bischler 1964**; **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. S. loc. (Lücking 1995; Schäfer-Verwimp 1999; Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Boquete distrito, Palo Alto, Boquete, *Salazar Allen et al. 767* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 750 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30770* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014).

COCOS I. Cerro Pelón, 5°32′57″N, 87°03′56″W, 500 m, *Dauphin A-7*, det. G. Dauphin Feb 2021 (USJ-47535!, **this publication**); Cerro Pelón, 5°32′57″N, 87°03′56″W, 500 m, 15 Feb 1994, *Dauphin A-7* (USJ, **Dauphin 1995**, **1999**, **2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 972 p.p.*, det. G. Dauphin Apr 2021 (USJ-47642!, **this publication**); S. loc. (Dauphin 1995).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea mosenii (Steph.) Bischl., *Rev. Bryol. Lichénol.* 35(1/4): 118, 1968 (Bischler 1967a).

≡*Leptolejeunea mosenii* Steph., *Sp. Hepat. (Stephani)* 5: 372, 1913 (Stephani 1913). Type: Brazil.

=*Leptolejeunea stenophylla* f. *latifolia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 146, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Bischler (1967a). Original material: Honduras, Lancetilla Valley, near Tela, 6 Dec 1927–20 Mar 1928, *Standley 56755* (JE, US).

GUATEMALA. S. loc. (Lücking 1995; Bastos 2004; Mello et al. 2011). ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); S. loc., *Pérez 319* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la

Conservación del Quetzal, *Freire et al. 69, 492* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ESCUINTLA: Below Las Lajas, 900–1,200 m, 2 Sep 1939, *Standley 64855* (NY, **Bischler 1967a**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. CAYO: Mountain Pine Ridge, Cave Rio Frio, 600 m, 1996, *Eggers BEZ 2/31* (hb. Eggers, **O'Shea et al. 1997**).

HONDURAS. S. loc. (Lücking 1995; Bastos 2004; Mello et al. 2011). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56755 p.p., 56807* (US, JE, **TYPE** of *Leptolejeunea stenophylla* f. *latifolia*, **Herzog 1951** as *Leptolejeunea stenophylla* f. *latifolia*); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56719, 56755, 56758, 56761, 56788, 56810 p.p.* (JE, US, **Bischler 1967a**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56807* (JE, US, **Bischler 1967a; Geissler and Bischler 1985** as *Leptolejeunea stenophylla* f. *latifolia*).

COSTA RICA. ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-73* (USJ, **Gradstein et al. 1994; Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-75, 92-217, 92-253, etc.* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

PANAMA. S. loc. (PR, **Bischler 1967a**; Lücking 1995; **Stotler et al. 1998**; Bastos 2004; Mello et al. 2011). CHIRIQUÍ: Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34641/A* (JE, MO-6690417, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34648* (JE, MO-6690417, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Drepanolejeunea orthophylla (Nees et Mont.) Bischl., *Rev. Bryol. Lichénol.* 35(1/4): 102, 1968 (Bischler 1967a) subsp. ***orthophylla***.

≡*Lejeunea orthophylla* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 265, 1843 (Montagne 1843). Type: French Guiana.

=*Lejeunea stenophylla* Lindenb. et Gottsche, *Syn. Hepat. 5*: 769, 1847 (Gottsche et al. 1847), syn. fide Bischler (1967a). Type: Mexico.

≡*Leptolejeunea stenophylla* (Lindenb. et Gottsche) Schiffn., *Hepat. (Engl.-Prantl)*: 117, 1893 (Schiffner 1893a).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000). ALTA VERAPAZ: E of Tactic Road to Tamakú, 1,500–1,650 m, 9 Apr 1939, *Standley 71216, 71308* (NY, **Bischler 1967a**); San Pedro Carchá municipio, Region of Cocolá, NE of Carchá, 2 Apr 1939, *Standley 70331* (NY, **Bischler 1967a**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 465, 470* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). IZABAL: Los Amates municipio, near Quiriguá, 72–150 m, 26–27 Apr 1939, *Standley 72521* (NY, **Bischler 1967a**). SAN MARCOS: Rio Ixpal, below Rodeo, 750 m, 14 Mar 1939, *Standley 68728* (FH, NY, **Bischler 1967a**).

HONDURAS. S. loc. (Jovet-Ast 1957 as *Leptolejeunea stenophylla*; Winkler 1967 as *Leptolejeunea stenophylla*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Leptolejeunea stenophylla*); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56807* (JE, US, **Zwickel 1932** as *Leptolejeunea stenophylla*; **Herzog 1951** as *Leptolejeunea stenophylla*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler C/3* (**Winkler 1967** as *Leptolejeunea stenophylla*).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000). CARTAGO: Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15571* (M, YU, NY, **Bischler 1967a; Morales 1991; Dauphin 2005**); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15616* (G, **Bischler 1967a; Morales 1991; Dauphin 2005**); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz* (B, M, **Bischler 1967a; Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,580 m, *Schäfer-Verwimp & Verwimp 34400* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Drepanolejeunea pinnatiloba Schiffn., *Bot. Jahrb. Syst.* 23(5): 591, 1897 (Schiffner 1897). Type: Cuba.

PANAMA. S. loc. (Reis et al. 2020). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9281* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

?COCOS I. S. loc. (Dauphin 1995). Note: We are not aware of any firsthand report from Costa Rica.

Also reported from the Caribbean, Northern South America, Brazil.

Drepanolejeunea ramentiflora Steph., *Sp. Hepat. (Stephani) 5*: 338, 1913 (Stephani 1913). Lectotype (Bischler 1964: 62): Costa Rica, s.d., *Pittier & Durand s.n.* (G-00069280 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115131&lang=en).

COSTA RICA. S. loc. (**Stephani 1913**; Gradstein et al. 2001b; Gradstein and Uribe 2016; **Gradstein 2021**; Pócs et al. 2022); S. loc., *Pittier & Durand* (G, **TYPE, Bischler 1964**; **Bonner 1965**; **Morales 1991**; **Dauphin 2005**).

Also reported from the Caribbean(?), Western South America.

Drepanolejeunea spinosa Herzog, *Feddes Repert. Spec. Nov. Regni Veg. 57*(1/2): 185, 1955 (Herzog 1955a). Type: Colombia.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/24/2* (**Winkler 1967**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 900–1,005 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34220/A*, *34263/H* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Drepanolejeunea submuricata R.M.Schust., *Phytotaxa* 208(1): 98, 2015 (Pócs et al. 2015b).

≡*Drepanolejeunea submuricata* R.M.Schust., *Nova Hedwigia* 62(1/2): 34, 1996 (Schuster 1996a), nom. inval. (ICN2018 Art. 40.7; no herbarium indicated). Type: Dominica.

COSTA RICA. S. loc. (Lavocat Bernard et al. 2009; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009 as *Drepanolejeunea submuricata*; Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016). CARTAGO: Paraíso cantón, Tapantí National Park, Orosi Valley, ~9°46′N, 83°48′W, 600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0365/A* (CR, JE, **Blockeel et al. 2009**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30993/A* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34222*, *34244/B*, *34259/A* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road. 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30737* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America.

Drepanolejeunea trigonophylla Steph., *Hedwigia* 35(3): 85, 1896 (Stephani 1896). Type: Guadeloupe, Martinique.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 146* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/24/4* (**Winkler 1967**).

Also reported from the Caribbean, Western South America.

***Dumortiera* Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 410, 1824 (Reinwardt et al. 1824b).**

Dumortiera hirsuta (Sw.) Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 410, 1825 (Reinwardt et al. 1824b) subsp. ***hirsuta***.

≡*Marchantia hirsuta* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

=*Dumortiera hirsuta* (Sw.) Nees var. *glabrocapitata* Steph., *Prim. flor. costar.*: 113, 1893 (Stephani 1893c), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, San José, Carillo, *Pittier 6016*.

GUATEMALA. S. loc. (**Evans 1919b**; Svihla 1942; Schuster 1992c; Yano and Luizi-Ponzo 2011 as *Dumortiera hirsuta* var. *hirsuta*). ALTA VERAPAZ: S. loc., *Pérez 189* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 428*, *440* (USCG, **Freire et al. 2013**). CHIMALTENANGO: S. loc., *Standley 64349* (NY, Pérez 2009). QUETZALTENANGO: S. loc., *Standley 67502* (NY, Pérez 2009); Zunil municipio, Fuentes Georginas, 4 km S of Zunil, NW slopes of Volcán Zunil, 14°45′4.0″N, 91°28′35.8″W, 2 Jan 2006, *Quedensley 3828*, det. Dauphin Sep 2017 (MO, W-0089060!, **this publication**).

***BELIZE.** *CAYO: Monkey Tail Branch from Las Cuevas to the confluence with the Raspaculo Branch, 16°45′N, 88°56′W, 12 Dec 1996, *Allen 18292*, det. Whittemore 2000 (MO-5215161! http://tropicos.org/specimen/90088070, **this publication**). *TOLEDO: Columbia River Forest Reserve, Camp 2, 16°22′59″N, 89°07′17″W, 11 Feb 1997, *Allen 18583*, det. Whittemore 2000 (MO-5215172! http://tropicos.org/specimen/90088081, **this publication**).

HONDURAS. S. loc. (**Evans 1919b**; Svihla 1942; Miller et al. 1983 as *Dumortiera hirsuta* var. *hirsuta*). *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, along stream entering Rio Bonito, 15°38–39′N, 86°51–52′W, 25 Apr 1996, *Allen 17592*, det. Whittemore 1996 (MO-44685, **this publication**). *COMAYAGUA: Rio Selguapa, ~4 km SE of Siguatepeque, 14°34′N, 87°48′W, 8 May 1992, *Allen 11762*, det. Whittemore 1993 (MO-3967040!, **this publication**). *LEMPIRA: Gracias municipio, Montaña de Celaque, SE portion of massif, 14°33′N, 85°39′W, 3 Jun 1992, *Allen 12794*, det. Whittemore 1992 (MO-3964986!, **this publication**). *OLANCHO: Catacamas municipio, Sierra de Algalta, Montaña Babilonia, ridge above La Chorrera 15 km NNW, 14°59′N, 85°56′W, 23 May 1991, *Davidse & Zúñiga 35592*, det. Whittemore 1992 (MO-3959668!, **this publication**). *SANTA BÁRBARA: Base of E slope of Mount Santa Bárbara, ~7 km N of El Mochito, 14°55′N, 88°07′W, 24

Nov 1991, *Allen 11690*, det. Whittemore 1992 (MO-3965017!, **this publication**).

EL SALVADOR. AHUACHAPÁN: S. loc. (**Standley and Calderón 1925**).

NICARAGUA. S. loc. (Schuster 1992c; Yano and Luizi-Ponzo 2011 as *Dumortiera hirsuta* var. *hirsuta*). *ATLÁNTICO SUR: Nueva Guinea municipio, 6.3 km S of bridge at Colonia Jun, 11°36–37′N, 84°22′W, 13–14 Feb 1978, *Stevens 6406*, det. Brinda & Dauphin May 2017 (MO-3669090!, **this publication**). CHINANDEGA: Volcán El Viejo, *Baker 2179* (W, **Bischler-Causse et al. 2005**). *CHONTALES: Cuapa municipio, 2.2 km NW of Rio Cuapa bridge below Cuapa, 12°18′04″N, 85°19′08″W, 17 Jan 2015, *Stevens & Montiel 35713*, det. Whittemore 1997 (MO-6494927!, **this publication**). *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, top and N slope of steep ridge SW of finca El Cielo, 13°15′N, 85°41′W, 13–18 Jan 1979, *Stevens 11314*, det. Whittemore 1997 (MO-4435996!, **this publication**). *NUEVA SEGOVIA: Murra municipio, near Quebrada Negra, 13°49′04″N, 85°58′55″W, 11 Jan 2015, *Stevens & Montiel 35601*, det. Whittemore 1997 (MO-6494928!, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Haupt 1942; Cole 1984; Dauphin 2005; Gradstein and Holz 2005); S. loc., *Endres 65* (W, **Bischler-Causse et al. 2005**). ALAJUELA: Alajuela cantón, Poás Volcán, E slope (**Morales 1991**); Alajuela cantón, Poás Volcán, E slope, 6,000 ft (1,829 m), 25 Jul 1940, *Haupt* (**Haupt 1942**); Alajuela cantón, Poás Volcán, E slope, 6,000 ft (1,829 m), 2 Aug 1940, *Haupt* (**Haupt 1942**); S. loc., *Salazar Allen et al. 20571* (PMA, **Forrest et al. 2011**); S. loc., *Salazar Allen et al. 20574* (PMA, **Forrest et al. 2011**); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Fuentes 821* (CR, **Dauphin 2005**); Upala cantón, Guanacaste National Park, Sector Santa María, Quebrada Provisión, *Dauphin 2313* (CR, **Dauphin 2005**). CARTAGO: Oreamuno cantón, Irazú Volcán, Pacific side, 6 Jul 1941, *Svihla 41-458 p.p.* (**Svihla 1942**; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Orosi, Río Grande de Orosi, *Jiménez 1629* (CR, **Dauphin 2005**; **Morales 1991**); Paraíso cantón, Valle del Río Grande de Orosi, cerca del puente colgante sobre el Río Grande de Orosi, en la carretera 224 de Purisil hacia el Parque Nacional Tapantí National Park, 9°46′00′N, 83°48′10′W, 1,200 m, Mar 2001–Feb 2002, *Salazar Allen et al.* (**Salazar Allen et al. 2004**); S. loc., *Salazar Allen et al. 17042*, *17043*, *17045*, *17101*, *20620*, *20633* (PMA, **Forrest et al. 2011**). GUANACASTE: Bagaces cantón, Guanacaste National Park, Sector Santa María, La Casona, *Dauphin 2417* (CR, **Dauphin 2005**). HEREDIA: Braulio Carrillo National Park, area Zurquí, *Gómez-Pignataro 20105* (U, **Bischler-Causse et al. 2005**); S. loc., *Salazar Allen et al. 17056* (PMA, **Forrest et al. 2011**). LIMÓN: Pococí cantón, Río Toro Amarillo, 2 km W de Guápiles, *Woodruff*, det. Griffin (FLAS, **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Cerro Echandi, *Gómez-Pignataro et al. 21847* (U, **Bischler-Causse et al. 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde (Morales 1991); Monteverde cantón, Eatons path, 4,500 ft (1,372 m), 9 Mar 1969, *James, W. 1969-88* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Copey, *Schäfer-Verwimp 266* (CR, **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); El Tablazo, Corillo, *Pittier 6016* (PC, **TYPE** of *Dumortiera hirsuta* var. *glabrocapitata*, **Stephani 1893c** as *Dumortiera hirsuta* var. *glabrocapitata*; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**); S. loc., *Holz 400* (E, **Forrest et al. 2011**).

PANAMA. S. loc. (**Evans 1919b**; Schuster 1992c; Stotler et al. 1998; Yano and Luizi-Ponzo 2011 as *Dumortiera hirsuta* var. *hirsuta*). BOCAS DEL TORO: Changuinola distrito, lower Changuinola River, *Lewis et al. 900* (MO, **Stotler et al. 1998**). CHIRIQUÍ: Boquete distrito, Holcomb Trail, *Cornman 3134*, *3135* (F, MO, **Stotler et al. 1998**); Boquete, 5 Sep 1940, *Svihla 40-403* (**Svihla 1942**; **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Institute of Hydraulic Resources and Electricity's plant nursery, 1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000 m, *Salazar Allen et al. 609* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Volcán, El Aguacatal, Caldera River, 2,100 m, *Salazar Allen 1175* (PMA, **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen et al. 1388* (PMA, **Stotler et al. 1998**); Antón distrito, Monumento Natural Cerro Gaital, El Valle de Antón, 8°37′34.6′N, 80°08′13.7′W, *Gudiño JGL VA04*, det. Salazar Allen (PMA, **Durant-Archibold et al. 2017**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**; **Dauphin et al. 2022**); S. loc. (He et al. 2016). PANAMA: Panamá distrito, Culebra Island, *Welch 19682* (PMA, **Stotler et al. 1998**); S. loc. (**Mitten 1854b**).

Also reported from Northern Europe, Southwestern Europe, Southeastern Europe, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, North-Central USA, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Dumortiera hirsuta subsp. ***nepalensis*** (Taylor) R.M.Schust., *Hepat. Anthocer. N. Amer.* 6: 386, 1992 (Schuster 1992c).

≡*Hygrophila nepalensis* Taylor, *Trans. Linn. Soc. London* 17(3): 392, 1836 (Taylor 1836). Type: Nepal.

≡*Dumortiera nepalensis* (Taylor) Nees, *Naturgesch. Eur. Leberm.* 4: 169, 1838 (Nees 1838a).

≡*Dumortiera hirsuta* var. *nepalensis* (Taylor) Frye et L.Clark, *Univ. Wash. Publ. Biol.* 6(1): 93, 1937 (Frye and Clark 1937).

HONDURAS. S. loc. (Haynes et al. 1923 as *Dumortiera nepalensis*; Schuster 1992c). GRACIAS A DIOS: Brus Laguna municipio, trail near Rio Platano, 1903, *Wilson 682* (**Evans 1919b** as *Dumortiera nepalensis*).

COSTA RICA. CARTAGO: Paraíso cantón, Valle del Río Grande de Orosi, cerca del puente colgante sobre el Río Grande de Orosi, en la carretera 224 de Purisil hacia el Parque Nacional Tapantí, 9°46′00′N, 83°48′10′W, 1,200 m, Mar 2001–Feb 2002, *Salazar Allen et al.* (**Salazar Allen et al. 2004**); Turrialba cantón, 12 km S of Turrialba, 9°48′N, 83°42′W, *Liesner 14346*, det. Whittemore (CR!, MO-3669078!, **Dauphin 2005** as *Dumortiera nepalensis*); Turrialba, Rio Chitaria, 9°55′N, 83°36′W, 10 May 1983, *Liesner 15424*, det. Whittemore (MO-4435992!, **this publication**). *GUANACASTE: Tilarán cantón, Río Negro fjord on S side of Lake Arenal, 10°25′N, 84°46′W, 10 May 1986, *Haber 4908*, det. Brinda and Dauphin Jun 2017 (MO-3677983!, **this publication**).

PANAMA. BOCAS DEL TORO: 15 km S of Changuinola, *Antonio 3109*, det. Brinda & Dauphin Jun 2017 (MO-2849690, **Stotler et al. 1998**). *CHIRIQUÍ: Boquete distrito, Holcomb Trail, 13 Apr 1918, *Cornman 3135*, det. Brinda & Dauphin Jun 2017 (MO-5139505!, **this publication**). COCLÉ: Antón distrito, El Valle de Antón, Río Las Mozas, 500 m, *Salazar Allen et al. 13478 p.p., 13484* (PMA, **Stotler et al. 1998**). DARIÉN: Pinogana distrito, trail from Cana to Cruce de Mono, 160–300 m, *Allen 9016* (MO, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Dumortiera nepalensis*; **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, Santa Fe National Park, 8°31′37′N, 81°09′00′W, *Gudiño JGL VA03*, det. Salazar Allen (PMA, **Durant-Archibold et al. 2017**).

Also reported from West-Central Tropical Africa, Southern Africa, Western Indian Ocean(?), China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, North-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil(?).

Fossombronia Raddi, *Jungermanniogr. Etrusca*: 29, 1818 (Raddi 1818b).

Fossombronia foveolata Lindb. *Helsingf. Dagbl. 1873 (353, 28 Dec)*: 2, 1873 (Lindberg 1873). Type: Sweden.

GUATEMALA. ALTA VERAPAZ: S. loc., 350 m, *Türckheim* (G, NY, **Freire 2002** as *Fossombronia brasiliensis*).

HONDURAS. COMAYAGUA: Siguatepeque, 1,080–1,400 m, 1928, *Standley 46456* (JE, **Freire 2002**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, Caucasus, Western Asia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Western South America.

Fossombronia porphyrorhiza (Nees) Prosk., *Bryologist* 58(3): 197, 1955 (Proskauer 1955).

≡*Jungermannia porphyrorhiza* Nees, *Fl. Bras. (Martius)* 1(1): 343, 1833 (Nees 1833b). Type: Brazil.

=*Fossombronia brasiliensis* Steph., *Mém. Herb. Boissier* 16: 28 (=*Sp. Hepat. [Stephani]* 1: 382), 1900 (Stephani 1900a), syn. fide Freire (2002). Type: Brazil.

GUATEMALA. S. loc., 350 m, *Türckheim* (G, **Freire 2006** as *Fossombronia brasiliensis*). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009); S. loc., 350 m, *Türckheim* (G, NY, **Freire 2002** as *Fossombronia brasiliensis*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 162* (USCG, **Freire et al. 2013**). JALAPA: Between Monjo and Jalapa, about 10 mi (16 km) south of Jalapa, 1,000 m, *Steyermark 32189* (F, **Freire 2002** as *Fossombronia brasiliensis*; **Pérez 2009**); between Monjo and Jalapa, about 10 mi (16 km) south of Jalapa, 1,000 m, *Steyermark 62189* (F, **Freire 2006**).

COSTA RICA. S. loc. (Cole 1984 as *Fossombronia brasiliensis*; Freire 2002 as *Fossombronia brasiliensis*). ALAJUELA: Between Grecia and Naranjo (**Morales 1991** as *Fossombronia brasiliensis*; Dauphin 2005); between Grecia and Naranjo, 3,700 ft (1,128 m), 11 Aug 1940, *Haupt* (**Haupt 1942** as *Fossombronia brasiliensis*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, *Dauphin et al. 3370* (CR, **Dauphin 2005**); La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3300* (CR, **Dauphin and Grayum 2005**; **Dauphin 2005**). SAN JOSÉ: Escazú cantón, Escazú, mountains 0.5 mi SW of village, 4,300 ft (1,310 m), 18 Jul 1940, *Haupt* (**Haupt 1942** as *Fossombronia brasiliensis*); Montañas de Escazú (Dauphin 2005); Montañas de Escazú y Aserrí (**Morales 1991** as *Fossombronia brasiliensis*).

PANAMA. PANAMA: Panamá distrito, Chagres National Park, Altos de Cerro Azul, Sendero El Cantar, *Stotler & Crandall-Stotler 3482* (ABSH, PMA, **Stotler et al. 1998** as *Fossombronia brasiliensis*; **Freire 2002**).

Also reported from North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania Raddi, *Jungermanniogr. Etrusca*: 9, 1818 (Raddi 1818b).

Frullania aculeata Taylor, *London J. Bot.* 5: 407, 1846 (Taylor 1846a). Type: Ecuador.

PANAMA. S. loc. (Gradstein 2021). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, between Alto de La Mesa and the summit region, 8°37.4–8′N, 80°06.9–7.0′W, 1,015 m,

26 Mar 2013, *Schäfer-Verwimp & Verwimp 34229* (JE, **Ellis et al. 2018a**).

Also reported from Northern South America, Western South America.

Frullania armata Herzog et L.Clark, *Bryologist* 57(1): 36, 1954 (Clark 1954a). Type: Costa Rica, San José Dota, vicinity of Santa María, altitude 1,500–1,800 m, 14–26 Dec 1925, *Standley 42479*.

COSTA RICA. SAN JOSÉ: Dota cantón, Santa María, 1,500–1,800 m, 14–26 Dec 1925, *Standley 42479* (**TYPE, Clark 1954a**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

Also reported from Western South America(?).

Frullania atrata (Sw.) Nees ex Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 12: 51, 1839 (Montagne 1839a).

≡*Jungermannia atrata* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

=*Frullania crinoidea* Spruce ex Steph., *Sp. Hepat. (Stephani)* 4: 604, 1911 (Stephani 1911b), syn. fide Uribe and Gradstein (2003). Type: Peru.

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990); S. loc., *Friedrich* (**Clark and Svihla 1948a**); S. loc., *Friedrichstahl* (G, **Clark and Svihla 1945a**); S. loc., *Svihla 45-603* (**Clark and Svihla 1948a**). ALTA VERAPAZ: E of Tactic, road to Tamahu, 1,500–1,650 m, 9 Apr 1939, *Standley 71276* (MICH, **Clark 1953d** as *Frullania crinoidea*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: S. loc., *Vogel B-9012* (MO, Pérez 2009); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15075* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15227* (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., *Meadows 5* (MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15316* (BRH, MO, **Whittemore and Allen 1996**).

***NICARAGUA.** *MATAGALPA: Cordillera Dariénse, 20 km N of Matagalpa, 1,500 m, 17 Sep 1981, *Balász 81/12/G p.p.*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**).

COSTA RICA. S. loc. (Clark and Svihla 1948a; Cole 1982, 1983). GUANACASTE: La Cruz cantón, Guanacaste National Park, Peninsula Santa Elena, 30 Aug 2003, *Dauphin 3306* (CR, F, **Larraín et al. 2015**). HEREDIA: Heredia cantón, Vara Blanca, 1941, *Svihla 41-487* (**Clark and Svihla 1945a**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde, Oct 1963, *James, W. 17* (R, **Reed and Robinson 1971**). SAN JOSÉ: Dota cantón, 9 mi (14 km) SW of El Empalme, *Woodruff* (FLAS, **Morales 1991**; **Dauphin 2005**); La Trinidad, *Morales 305* (FLAS, **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**); Moravia cantón, La Palma, *Pittier 6036* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania beyrichiana (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 460, 1845 (Gottsche et al. 1845a).

≡*Jungermannia beyrichiana* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 25, 1833 (Lehmann 1833). Type: Brazil.

GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Frullania* cf. *beyrichiana*). ALTA VERAPAZ: Route 14 between Cobán and Tactic, 6 mi (6.7 km) S of Cobán, 13 mi (21 km) N of Tactic, *Croat 41433*, det. Whittemore 1990 (MO, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

†**COSTA RICA.** S. loc. (Cole 1982, 1983). Note: There is no mention of this species in the literature cited by Cole, and we are not aware of any other report from Costa Rica.

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania bicornistipula Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 46, 1884 (Spruce 1884). Type: Ecuador.

=*Frullania bradeana* Steph., *Sp. Hepat. (Stephani)* 6: 545, 1924 (Stephani 1924), syn. fide Stotler (1969). Lectotype (Bonner 1965: 253; see also Stotler 1969: 460 as "type") or possibly holotype: Costa Rica, s. loc., 1912, *Brade s.n.* (G-00069145 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=112256&lang=en).

≡*Frullania bicornistipula* var. *bradeana* (Steph.) L.Clark et Svihla, *Bryologist* 54(2): 124, 1951 (Clark and Svihla 1951a).

COSTA RICA. S. loc. (Bonner 1965 as *Frullania bicornistipula* var. *bradeana*; Cole 1982, 1983; Rico and Pócs 2004; Gradstein and Uribe 2011, 2016; Gradstein 2021); S. loc., 1912, *Brade* (G, **Bonner 1965** as *Frullania bradeana*; **Stotler 1969**; **Dauphin 2005**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Morales 176* (FLAS, **Morales 1991**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50256*, *50265*, *50510* (**Herzog 1951** as *Frullania bradeana*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, NE of San Isidro, 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50265*, *50510* (**Clark and Svihla 1951a** as *Frullania bicornistipula* var. *bradeana*). SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48256*, *48285*, *48289* (G, **Herzog 1951** as *Frullania bradeana*; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, Cerro Zurquí, 1,600 m, 13 Feb 1926, *Standley & Valerio 48257* (**Clark and Svihla 1951a** as *Frullania bicornistipula* var. *bradeana*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, 13 Feb 1926, *Standley & Valerio 48289* (**Clark and Svihla 1951a** as *Frullania bicornistipula* var. *bradeana*); Moravia cantón, La Palma, 1,600 m, 17 Apr 1924, *Standley 38128* (**Clark and Svihla 1951a** as *Frullania bicornistipula* var. *bradeana*; **Herzog 1951** as *Frullania bradeana*; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,150–1,245 m, *Salazar Allen et al. 6338*

(PMA, **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, *Spörle 1.17*, *1.42* (PMA, **Stotler et al. 1998**).

Also reported from Northern South America, Western South America, Brazil.

Frullania brachycarpa Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cciv, 1889 (Spruce 1889). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350 m, Dec 1906, *Türckheim 5419* (NY, **Clark 1956a**). BAJA VERAPAZ: Santa Rosa, 1,600 m, Dec 1906, *Türckheim 5054* (NY, **Clark 1956a**).

Also reported from Mexico, Western South America(?), Brazil.

Frullania brasiliensis Raddi, *Critt. Brasil.*: 12, 1822 (Raddi 1822). Type: Brazil.

=*Jungermannia mucronata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 54, 1834 (Lehmann 1834), syn. fide Uribe and Gradstein (2003). Type: Peru.

≡*Frullania mucronata* (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 2: 461, 1845 (Gottsche et al. 1845b).

=*Frullania cylindrica* Lehm., *Nov. Stirp. Pug.* 8: 13, 1844 (Lehmann 1844), syn. fide Stotler (1969). Type: Mexico.

=*Frullania patens* Lindenb., *Syn. Hepat.* 3: 462, 1845 (Gottsche et al. 1845a), syn. with *Frullania mucronata* fide Gradstein and Hekking (1979). Type: Brazil.

=*Frullania cylindrica* var. *minor* Husn., *Rev. Bryol.* 2: 4, 1875 (Husnot 1875), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Stotler (1969). Type: Guadeloupe.

=*Frullania brasiliensis* var. *robusta* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 51, 1884 (Spruce 1884), syn. fide Stotler (1969). Type: Ecuador.

≡*Frullania robusta* (Spruce) Steph., *Sp. Hepat. (Stephani)* 4: 505, 1911 (Stephani 1911b).

=*Frullania spruceana* Steph., *Hedwigia* 33(3): 160, 1894 (Stephani 1894b), syn. fide Stotler (1969). Type: Ecuador.

=*Frullania cocosensis* Steph., *Sp. Hepat. (Stephani)* 4: 492, 1911 (Stephani 1911b), syn. with *Frullania mucronata* fide Stotler (1969). Lectotype (Stotler 1969: 447 as "type"): Costa Rica, Cocos Island, *Pittier s.n.* (G-00265584 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=302078&lang=en, synlectotype G).

=*Frullania lacouturei* Steph., *Sp. Hepat. (Stephani)* 4: 499, 1911 (Stephani 1911b), syn. with *Frullania mucronata* fide Stotler (1969). Lectotype (Stotler 1969: 447 as "type") or possibly holotype: Panamá, Chiriquí, *Hélion s.n.* (G-00069229 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=114970&lang=en).

=*Frullania panamana* Steph., *Sp. Hepat. (Stephani)* 4: 529, 1911 (Stephani 1911b), syn. with *Frullania mucronata* fide Stotler (1969). Lectotype (Stotler 1969: 438 as "type") or possibly holotype: Panama, s. loc., *Wagner s.n.* (G-00069179 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113782&lang=en).

=*Frullania rufa* Steph., *Sp. Hepat. (Stephani)* 4: 505, 1911 (Stephani 1911b), syn. fide Stotler (1969). Type: Venezuela.

=*Frullania robusta* f. *spinuliflora* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica "Prov. Cartago, El Muñeco, S of Navarro, 1400m, *Standley 33561/a*; Prov. S. José, La Hondura, 1200-1500 m, *Standley 51833*; Prov. San José, Santa Maria de Dota, 1500-1800 m, *Standley 43171*." Note: All three specimens in US have been reidentified as *Frullania spruceana*.

≡*Frullania brasiliensis* f. *spinuliflora* (Herzog) G.Dauphin, *Trop. Bryol.* 26: 159, 2005 (Dauphin 2005), nom. inval. (ICN2018 Art. 41.3; basionym not cited).

=*Frullania robusta* f. *latioribus* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: South slope of Volcán de Turrialba, near Finca of V. de T., 2,000–2,400 m, *Standley* 35282 (US-04646674 http://n2t.net/ark:/65665/3f617aab5-3810-43fa-b6fb-d730e9ae339d) is reidentified as *Frullania spruceana*.

=*Frullania hondurae* Herzog et L.Clark, *Bryologist* 56(4): 289, 1953 (Clark and Svihla 1953a), syn. fide Stotler (1969). Lectotype (Stotler 1969: 438): Costa Rica, San José, La Hondura, 1,300–1,700 m, *Standley 36559* (US-00070891 http://n2t.net/ark:/65665/3e774f1d9-cd2a-4f3b-b414-7d170b75d4b2, isolectotype JE-04002301 https://je.jacq.org/JE04002301).

GUATEMALA. S. loc. (Stephani 1911b as *Frullania robusta*; Bonner 1965 as *Frullania patens* and *Frullania robusta*; Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Fuertes and Prada 2020). ALTA VERAPAZ: Cobán, 1,260–1,440 m, *Standley 69393*, *92197* (F, NY, **Stotler 1969**; **Freire 2006**); Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009); Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 118*, *484*, *530* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1182* (USCG, Pérez 2009). *QUETZALTENANGO: Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 22 Dec 2004, *Quedensley 2052*, det. Dauphin Sep 2017 (CAS, W-0089062!, **this publication**); Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 22 May 2005, *Quedensley 2348*, det. Dauphin Sep 2017 (MO, W-0089063!, **this publication**); Zunil municipio, road from Aldea Chuimucubal, NW slopes of Pico Zunil, 14°45′56.35″N, 91°28′14.69″W, 14 Jan 2006, *Quedensley 3998*, det. Dauphin Sep 2017 (MO, W-0089061!, **this publication**). QUICHÉ: S. loc., *Pérez 2224* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Frullania* aff. *brasiliensis*). Note: We are not aware of any firsthand report from Zacapa.

NICARAGUA. RÍO SAN JUAN: San Carlos municipio, Mancaron, 2,100 m, *Pittier 6030* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Van Dunné 83* (AMD, **Kappelle 1996**); S. loc. (Stephani 1911b as *Frullania robusta*; Clark and Svihla 1948a; Bartram and Arnell 1961 as *Frullania robusta*; Bonner 1965 as *Frullania robusta* and *Frullania robusta* f. *spinuliflora*; Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Gradstein and Holz 2005; Fuertes and Prada 2020 as *Frullania brasiliensis* f. *spinuliflora*); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851** also as *Frullania cylindrica*); S. loc., *Oersted* (YU, G, S, **Hampe 1851b** also as *Frullania cylindrica*; **Polakowsky 1879** also as *Frullania cylindrica*); S. loc., *Pittier 6062* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Lucas 45* (UC, **Norris et al. 2017**). CARTAGO: Alto de La Estrella, *Standley 39324* (**Herzog 1951** as *Frullania rufa*; **Morales 1991**; **Dauphin 2005**); Cartago cantón, El Muñeco, S of Navarro, 1,400 m, *Standley 33561a* (**Herzog 1951** as *Frullania robusta* f. *spinuliflora*; **Morales 1991**; **Dauphin 2005**); Santiago, *Maxon 84* (NY, **Morales 1991**; **Dauphin 2005**); Santiago, E of Cartago, 1,050 m, *Maxon 84* (NY, **Stotler 1969**); Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879** as *Frullania cylindrica* var. *minor*); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 467* (**Polakowsky 1877** as *Frullania cylindrica* var. *minor*; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Volcán Turrialba, S slope, near Finca, 2,000–2,400 m, *Standley 35282* (**Herzog 1951** as *Frullania robusta* f. *latioribus*; **Clark 1953b** as *Frullania spruceana*; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Volcán Turrialba, S slope, near Finca, 2,000–2,400 m, 22 Feb 1926, *Standley 34963*, *34977*, *35104* (**Herzog 1951** as *Frullania robusta*; **Clark 1953b** as *Frullania spruceana*; **Morales 1991**; **Dauphin 2005**; **Söderström et al. 2012a** as *Frullania brasiliensis* f. *spinuliflora*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Griffin et al. D170*, *D226* (FLAS, **Morales 1991**; **Dauphin 2005**); Heredia cantón, Vara Blanca, 2 Jul 1941, *Svihla 41-481* (**Clark and Svihla 1944b**; **Morales 1991**; **Dauphin 2005**); Heredia cantón, Vara Blanca, 12 Jul 1941, *Svihla 41-482*, *41-486* (**Clark and Svihla 1944c**; **Morales 1991**; **Dauphin 2005**); Rancho Flores forest, *Pittier 6027* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama, *Dauphin 2951* (NY, **Dauphin 2005**). PUNTARENAS: Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, Oct 1963, *James, W. 15* (R, **Reed and Robinson 1971**, **Dauphin 2005**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b** as *Frullania mucronata*); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43171* (**Herzog 1951** as *Frullania robusta*); Dota cantón, Santa María, 1,500–1,800 m, 3 Jan 1926, *Standley & Valerio 43171* (**Clark 1953b** as *Frullania spruceana*; **Morales 1991**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Moravia cantón, La Hondura, *Griffin et al. 327* (FLAS, **Morales 1991**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51833* (**Herzog 1951** as *Frullania robusta* f. *spinuliflora*); Moravia cantón, La Hondura, 1,300–1,700 m, 2–4 Mar 1924, *Standley 36559* (US-00070891, JE-04002301, **TYPE** of *Frullania hondurae*, **Clark and Svihla 1953a** as *Frullania hondurae*; **Bonner 1965** as *Frullania hondurae*; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,200–1,500 m, 9 Mar 1926, *Standley & Valerio 51833* (**Clark 1953b** as *Frullania spruceana*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,450–1,550 m, *Maxon 471* (NY, **Stotler 1969**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (**Mitten 1854b**; **Stephani 1911b** as *Frullania lacouturei* and *Frullania panamana*; Clark and Svihla 1948a; Fulford and Sharp 1990; Stotler et al. 1998; Oliveira-e-Silva and Yano 2000; Fuertes and Prada 2020); S. loc., *Wagner* (G, **Bonner 1965** as *Frullania panamana*; **Stotler 1969**; **Stotler et al. 1998**). CHIRIQUÍ: Boquete distrito, Dexter's Brook, *Cornman 3077* (F, **Stotler et al. 1998**); Boquete distrito, Watson's Indian country, *Cornman 3063* (F, **Stotler et al. 1998**); Boquete, *Svihla 40-446* (**Stotler et al. 1998**); Chiriquí, Boquete, Los Naranjos, buffer zone of Parque Internacional La Amistad (PILA) along trail of El Pianista, 8°49′07.4″N, 82°25′20″W, 1,410 m above sea level, 5 Mar 2022, det. Á. Benítez, leg. C. Arrocha 3295 (UCH, **Ellis et al. 2022b**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 521* (PMA, **Stotler et al. 1998** as *Frullania mucronata*); Lawler's coffee tile and woods, *Cornman 3070* (F, **Stotler et al. 1998** as *Frullania mucronata*); S. loc., *Hélion* (G-00069229, **TYPE** of *Frullania lacouturei*, **Bonner 1965** as *Frullania lacouturei*; **Stotler 1969** as *Frullania mucronata*; **Stotler et al. 1998** as *Frullania mucronata*); Tierras Altas distrito, Cerro Punta, Las Cumbras, 8,000–8,250 ft (2,438–2,515 m), *Salazar Allen 1055b* (PMA, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Barbour Point, 2003, *Dauphin 3155* (CR, PMA, **Dauphin et al. 2022**). PANAMA: Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 1 Aug 1950, *Meyer 124* (TENN, **Crum and Arzeni 1953**; **Stotler et al. 1998**); Panamá distrito, Taboga Island, Apr 1846, *Seemann* (NY,

Stotler et al. 1998); Panamá distrito, Taboga, *Seemann* (NY, **Stotler 1969**).

COCOS I. Boca Río Genio, 5°32′57″N, 87°03′56″W, 5 m, *Dauphin 952*, det. S. R. Gradstein (USJ, CR, U, **Dauphin 1995**, **1999**, both as *Frullania mucronata*, **2005**); Boca Río Genio, 5°32′57″N, 87°03′56″W, 5 m, 15 Feb 1994, *Dauphin 951*, det. S. R. Gradstein (USJ, U, **Dauphin 1995** as *Frullania mucronata*); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 15 Feb 1994, *Dauphin 1079*, det. S. R. Gradstein (USJ, CR, U, **Dauphin 1995** also as *Frullania mucronata*); Río Genio, 5°32′57″N, 87°03′56″W, 5 m, 15 Feb 1994, *Dauphin 947*, det. S. R. Gradstein (USJ, U, **Dauphin 1995**, **1999**, both as *Frullania mucronata*, **2005**); S. loc. (**Stephani 1911b** as *Frullania cocosensis*; Fosberg and Klawe 1966 as *Frullania cocosensis*; Dauphin 1995 as *Frullania mucronata*); S. loc., 1902, *Pittier* (G, **Bonner 1965** as *Frullania cocosensis* ["Galapagos"]; **Stotler 1969** as *Frullania mucronata*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Frullania mucronata*); Wafer Bay, 28 Jun 1932, *Howell 226* (**Clark 1953a** as *Frullania cocosensis*; **Clark and Schultz 1953c** as *Frullania cocosensis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Frullania breuteliana Gottsche, *Syn. Hepat.* 3: 461, 1845 (Gottsche et al. 1845a). Type: St. Kitts.

=*Frullania sagittistipula* Lindenb. et Gottsche, *Syn. Hepat.* 5: 784, 1847 (Gottsche et al. 1847), syn. fide Stotler (1969). Type: Mexico.

GUATEMALA. S. loc. (Stephani 1911b as *Frullania sagittistipula*; Bonner 1965 as *Frullania sagittistipula*; Fulford 1987; Fulford and Sharp 1990; Rico and Pócs 2004); S. loc., 350 m, *Türckheim* (NY, **Freire 2006**). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009); S. loc., 350 m, *Türckheim* (G ex hb. Levier 5822, NY, **Stotler 1969**).

?COSTA RICA. S. loc. (Bonner 1965 as *Frullania sagittistipula*). Note: We are not aware of any firsthand report from Costa Rica.

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania confertiloba Steph., *Sp. Hepat. (Stephani)* 4: 326, 1910 (Stephani 1910a). Lectotype: Colombia.

PANAMA. S. loc. (**Stephani 1910a**; Bonner 1965; Stotler et al. 1998).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Frullania convoluta Lindenb. et Hampe, *Linnaea* 24(3): 303, 1852 (Hampe 1851b). Lectotype (Söderström et al. 2023b: 2): Costa Rica, Turrialba, *Oersted s.n.* (G-00113901 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=238596&lang=en, isolectotypes BM-728470, BM-728471, G-20611).

=*Frullania convoluta* f. *typica* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 26.1; type of species included). Original material: Costa Rica: Prov. Cartago, Cerro de la Carpintera, 1,500–1,850 m, *Standley 34347* (US-04545300 http://n2t.net/ark:/65665/312ff26f8-f223-4e65-883f-4178b29f2846); Prov. San José, La Hondura, 1,300–1,700 m, *Standley 36609* (US-04545305 http://n2t.net/ark:/65665/3e479c27a-7ad6-41e8-85c9-8948c8671fc5); same locality, 1,200–1,500 m, *Standley 51821* (US-04545304 http://n2t.net/ark:/65665/3a7327278-73f5-40bd-ac8f-98e654461c7f).

=*Frullania convoluta* f. *intermedia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Uribe (2008). Original material: Costa Rica: Prov. San José, La Hondura, 1,300–1,700 m, *Standley 36318* (US-04545313 http://n2t.net/ark:/65665/38147b30d-0794-4439-8ab5-f6bd0be1f8a5), Prov. San José, La Palma, wet bank, 1,600 m, *Standley 38008* (US-04545302 http://n2t.net/ark:/65665/38b2618f3-6557-4ebc-a96e-abfd142bbe62); Prov. Alajuela, Viento Fresco, on tree, 1,600–1,700 m, *Standley 47890* (US-04545301 http://n2t.net/ark:/65665/35ef8fd15-9d7c-401a-9804-7bc97aac48f6); Prov. Heredia, Cerros de Zurquí, 2,000–2,400 m, *Standley 50434* (US-04545312 http://n2t.net/ark:/65665/3bccd3341-8f76-4c22-838d-460a5208b0e5).

=*Frullania convoluta* var. *ampliata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), syn. fide Söderström et al. (2023b). Lectotype (Söderström et al. 2023b: 2): Costa Rica, La Palma, Province de San José, altitude about 1,600 m, 3 Feb 1924, *Standley 33014* (JE-04002308 https://je.jacq.org/JE04002308).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350 m, Mar 1879, *Türckheim 412 p.p.* (GOET, **Uribe 2005**, **2008**); Cobán, 1,350 m, May 1908, *Türckheim 6075* (NY, **Uribe 2005**, **2008**).

HONDURAS. COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 14°48′N, 88°52′W, 1,800–1,900 m, 11 Mar 1993, *Allen 13853*, *13907*, *13938* (MO, **Uribe 2005**, **2008**); San Juanillo, Cordillera de Montecillos, trail between San Juanillo and La Danta, 14°30′N, 87°52′W, 1,800–1,900 m, 7 Nov 1991, *Allen 11035* (MO, **Uribe 2005**, **2008**). OLANCHO: Catacamas municipio, Sierra de Algalta, La Chorrera, Rio Lara, 1,100–1,800 m, 29–30 May 1992, *Allen 12527* (MO, **Uribe 2005**, **2008**); Catacamas municipio, Sierra de Algalta, La Chorrera, Rio Lara, 1,100–1,800 m, 29–30 May 1992, *Allen 12539* (MO, **Uribe 2005**, **2008**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 650* (CR, **Kappelle 1996**); S. loc. (Stephani 1911b; Pagán 1942b; Clark and Svihla 1948a; Jovet-Ast 1959; Cole 1982, 1983; **Fulford and Sharp 1990**; **Romero 1999** as *Frullania convoluta* f. *intermedia*; Dauphin 2005; Gradstein and Holz 2005; Lavocat Bernard et al. 2009). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,700 m, 13 Feb 1926, *Standley 47890* (US, **Herzog 1951** as *Frullania convoluta* f. *intermedia*; **Morales 1991**; **Dauphin 2005**; **Uribe 2005**, **2008**). CARTAGO: Alvarado cantón, Coliblanco, 1,950 m, 30 Apr–2 May 1906, *Maxon 229* (NY, **Uribe 2005**, **2008**); La Georgina de Villa Mills, km 95 carretera Interamericana, 2,990 m, 11 Jan 1986, *Kappelle MK650* (GOET, **Uribe 2005**, **2008**); La Union cantón, Cerro de la Carpintera, Viento Fresco, 1,500–1,850 m, *Standley 34347* (**Herzog 1951** as *Frullania convoluta* f. *typica*; **Morales 1991**; **Dauphin 2005**);

Turrialba, *Oersted* (G-00113901, BM, **TYPE**, **Hampe 1851b**; **Müller 1851**; **Polakowsky 1879**; **Bonner 1965**; **Morales 1991**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51986* (**Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, N of San Isidro, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51458* (Y, **Clark and Svihla 1947a**; **Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50434* (**Herzog 1951** as *Frullania convoluta* f. *intermedia*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50457* (**Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*); San Isidro cantón, Cerro Zurquí, *Standley 51457* (**Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, NE of San Isidro, 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50434* (Y, **Clark and Svihla 1947a**; **Morales 1991**; **Dauphin 2005**; **Uribe 2005, 2008**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49844* (**Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Morales 1991**; **Dauphin 2005**); San Rafael cantón, Río Las Vueltas, 10°05′N, 84°04′W, 2,020–2,040 m, 4 Sep 1979, *Stevens 13956* (MO, **Uribe 2005, 2008**). PUNTARENAS: Coto Brus cantón, Las Cruces, 1,200 m, *Gómez-Pignataro 25360* (MO, **Uribe 2005, 2008**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, 9 Nov 1993, *Gradstein 9437*, *9462* (GOET, **Uribe 2005, 2008**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,500–1,550 m, 20 Feb 1992, *Ingram et al. 1485* (GOET, **Uribe 2005, 2008**); S. loc. (**Merwin et al. 2001**); S. loc., *Oersted* (BM-728470, **Uribe 2005, 2008**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Montaña de Poás, Macizo de Escazú, 2,400 m, *Pittier 6031* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, Alto La Palma, 1,500 m, 3 Feb 1979, *Griffin et al. A26* (MEXU, **Uribe 2005, 2008**); Moravia cantón, Braulio Carrillo National Park, La Hondura, *Dauphin 2971* (NY, **Dauphin 2005**); Moravia cantón, Camino a la Hondura, 30 km NE de la universidad, 1,400 m, 28 Aug 1973, *Griffin et al. 375* (MEXU, MO, NY, **Uribe 2005, 2008**); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48170* (**Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Morales 1991**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51821* (**Herzog 1951** as *Frullania convoluta* f. *typica*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36609* (**Herzog 1951** as *Frullania convoluta* f. *typica*); Moravia cantón, La Hondura, 1,300–1,700 m, 2–4 Mar 1924, *Standley 36318* (US, **Herzog 1951** as *Frullania convoluta* f. *intermedia*; **Morales 1991**; **Dauphin 2005**; **Uribe 2005, 2008**); Moravia cantón, La Palma on road to Hondura, 1,500–1,700 m, 17–18 Jul 1923, *Maxon & Harvey 8052* (Y, **Clark and Svihla 1947a**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma on the Pacific slope, Jul 1895, *Tonduz* (Y, **Clark and Svihla 1947a**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, *Standley 33014* (**TYPE** of *Frullania convoluta* var. *ampliata*, **Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Standley 33039* (**Herzog 1951** as *Frullania convoluta* var. *ampliata*; **Bonner 1965** as *Frullania convoluta* var. *ampliata*; **Dauphin 2005**); Moravia cantón, La Palma, *Valerio* (CR, **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, Jul 1895, *Tonduz 15537* (NY, **Uribe 2005, 2008**); Moravia cantón, La Palma, 1,450–1,550 m, 6–8 May 1906, *Maxon 399*, *472* (NY, **Uribe 2005, 2008**); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38008* (US, **Herzog 1951** as *Frullania convoluta* f. *intermedia*; **Morales 1991**; **Dauphin 2005**; **Uribe 2005, 2008**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (**Romero et al. 2006**); S. loc. (Romero 1999; Markham and Fernández 2021); via La Hondura, 1,500–1,700 m, *Maxon 2871* (GOET, MO, NY, **Uribe 2005, 2008**).

PANAMA. S. loc. (Stephani 1911b; Pagán 1942b; Clark and Svihla 1947a, 1948a; Jovet-Ast 1959; Bonner 1965 as *Frullania convoluta* f. *intermedia*; Fulford and Sharp 1990; Stotler et al. 1998; Gradstein 1999a; Lavocat Bernard et al. 2009). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1546* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**); Parque Internacional La Amistad, Cerro Fábrega, 3,335 m, 12 Feb 1995, *Dauphin et al. 1546* (GOET, **Uribe 2005, 2008**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Frullania crispiloba Steph., *Hedwigia* 33(3): 156, 1894 (Stephani 1894b). Type: Brazil.

HONDURAS. S. loc. (Fulford and Sharp 1990; Morales and Moreno 2009). FRANCISCO MORAZÁN: Distrito Central municipio, La Montañita, 1,500 m, *Standley 12355 p.p.* (F, **Stotler 1969**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Frullania cuencensis Taylor, *London J. Bot. 5*: 406, 1846 (Taylor 1846a). Type: Ecuador.

***GUATEMALA.** *QUETZALTENANGO: Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N,

91°29′21.6″W, 1 Jan 2006, *Quedensley 3863*, det. Dauphin Sep 2017 (MO, W-0089064! https://w.jacq.org/W0089064, **this publication**).

COSTA RICA. Cordillera de Talamanca, *Van Dunné 88* (AMD, **Kappelle 1996**); S. loc. (Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014). ?GUANACASTE: La Cruz cantón, Guanacaste National Park, Playa Gringos, Quebrada Despeñadero, 0–50, 27 Aug 2003, *Dauphin et al. 3289*, det. Gradstein (CR, GOET, F, Dauphin 2005 as *Frullania* cf. *cuencensis*; Dauphin and Grayum 2005 as *Frullania* cf. *cuencensis*). Note: We are not aware of any positively identified specimen from Guanacaste. SAN JOSÉ: Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,260 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30875* (JE, **Schäfer-Verwimp 2014**).

Also reported from South-Central USA(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania dusenii Steph., *Arch. Mus. Nac. Rio de Janeiro* 13(9): 115, 1905 (Dusén 1905). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 74* (**Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). *CHIMALTENANGO: Acatenango municipio, Volcán Acatenango road from Parramos to Yepocapa, above Chichoy Bajo, ~8.65 km W of San Miguel Dueñas, 14°32′20.8″N, 90°52′35.9″W, 9 Dec 2013, *Quedensley 13048*, det. Dauphin Sep 2017 (MO, W-0089065!, **this publication**). HUEHUETENANGO: S. loc., *Pérez 1246* (USCG, **Pérez 2009**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014). *ALAJUELA: San Carlos, Volcán Arenal, 3 km from the active crater, 14 Dec 1977, *Balázs 77/16/D*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**). SAN JOSÉ: Chirripó National Park, near the entrance, 12 Dec 2002, *Kaczmarech 146*, det. Dauphin (CR, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,380 m, *Schäfer-Verwimp & Verwimp 34363/B* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,380 m, *Schäfer-Verwimp & Verwimp 34371* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from the Caribbean, Western South America, Brazil.

Frullania ecklonii (Spreng.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 413, 1845 (Gottsche et al. 1845a).

≡*Jungermannia ecklonii* Spreng. *Syst. Veg. (ed. 16) [Sprengel]* 4(2): 324, 1827 (Sprengel 1827a). Type: South Africa.

GUATEMALA. S. loc. (Clark and Svihla 1956). ALTA VERAPAZ: S. loc., *Pérez 321* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Clark and Svihla 1956). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania ericoides (Nees) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 12: 51, 1839 (Montagne 1839a).

≡*Jungermannia ericoides* Nees, *Fl. Bras. (Martius)* 1(1): 346, 1833 (Nees 1833b). Type: Brazil.

=*Frullania ericoides* var. *squarrosa* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 12: 51, 1839 (Montagne 1839a), syn. fide Grolle (1968a). Type: Java.

≡*Frullania squarrosa* (Mont.) Nees, *Syn. Hepat.* 2: 416, 1845 (Gottsche et al. 1845b).

=*Frullania allionii* Steph., *Sp. Hepat. (Stephani)* 4: 394, 1910 (Stephani 1910a), syn. fide Gradstein and Pérez (2021). Type: Ecuador.

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 600 m, 2002 (**Andersohn 2004**). EL PETÉN: San José municipio, Cerro Cahuí, *Can et al.* (USCG, **Morales 2011**); San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**).

HONDURAS. S. loc. (Miller et al. 1983 as *Frullania squarrosa*). EL PARAÍSO: El Paraíso municipio, San Francisco, El Zamorano, 800 m, 4 Jan 1947, *Standley & Padilla 1960* (**Clark and Svihla 1950a** as *Frullania squarrosa*).

NICARAGUA. CHINANDEGA: El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 270 p.p.* (CAS, **Clark 1953a** as *Frullania squarrosa*): El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 244*, det. A. Whittemore 2023 (CAS-692237! https://www.gbif.org/occurrence/4035314342, **Clark 1953a** as *Frullania inflata*).

COSTA RICA. S. loc. (Schiffner 1898a as *Frullania squarrosa*; Bonner 1965 as *Frullania allionii*). CARTAGO: Turrialba cantón, Angostura, *Polakowsky 467a* (**Morales 1991**; **Dauphin 2005**); Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879** as *Frullania squarrosa*); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 467a* (**Polakowsky 1877** as *Frullania squarrosa*). SAN JOSÉ: Dota cantón, Santa María, 1,500–1,800 m, *Standley 43164* (**Herzog 1951** as *Frullania squarrosa*; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,110 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30869* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N,

82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30929* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34519/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350–1,370 m, *Schäfer-Verwimp & Verwimp 34341*, *34360/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, 8°48′54.0″N, 82°34′33.9″W, 2,038 m, 11 Aug 2017, *Guerra* (**Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34667/a* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31045* (JE, **Schäfer-Verwimp 2014**). PANAMA: Paraíso recreation park, *Vinda 311* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34265*, *34269*, *34278* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, Rio Santa María, 8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30800* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30849* (JE, **Schäfer-Verwimp 2014**).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Arabian Peninsula(?), China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania gibbosa Nees, *Syn. Hepat.* 3: 411, 1845 (Gottsche et al. 1845a). Lectotype: Jamaica.

=*Frullania tolimana* Steph. *Sp. Hepat. (Stephani)* 4: 339, 1910 (Stephani 1910a), syn. fide Yuzawa (1991). Type: Colombia.

GUATEMALA. S. loc. (Arnell 1959; Bonner 1965 as *Frullania tolimana*). EL PETÉN: La Libertad municipio, Sabana San Francisco, 30 Mar 1933, *Lundell 2242b* (WTU, **Clark 1956b**). RETALHULEU: San Felipe, 600 m, *Maxon 3546* (**Clark 1956b**).

HONDURAS. S. loc. (Arnell 1959). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54446* (**Clark 1956b**). COMAYAGUA: Siguatepeque municipio, El Achiote, 1,350 m, *Yuncker et al. 6588* (NY, **Yuzawa 1991**); Siguatepeque, 1,080–1,400 m, *Standley 56075* (**Clark 1956b**).

COSTA RICA. S. loc. (Bonner 1965 as *Frullania tolimana*; Schäfer-Verwimp 1989 as *Frullania tolimana*, 2014; Schäfer-Verwimp and Pócs 2009). CARTAGO: Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879**); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 454* (**Polakowsky 1877**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, 3 km S of crossroad, *Kaczmarech 206*, det. Dauphin (CR, **Dauphin 2005**). SAN JOSÉ: Alajuelita cantón, La Verbena, *Tonduz 15527* (FLAS, **Morales 1991**; **Dauphin 2005**); Dota cantón, San Marcos (Dauphin 2005); Dota cantón, San Marcos, *Tonduz 1555* (NY, **Yuzawa 1991**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Stotler et al. 1998). CHIRIQUÍ: Tierras Altas distrito, El Volcán, 8°46.9′N, 82°38.8′W, 1,410 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34651* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34607/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34667/B* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31044* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, 8°36.3′N, 80°07.8′W, 600 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34178* (JE, **Schäfer-Verwimp 2014**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, between Pirre 1 and Pirre 2, 50 m, *Salazar Allen & Gradstein 9203* (PMA, **Stotler et al. 1998**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Pinogana distrito, ~20 km SSW of Boca de Cupé, ~200 m, *Allen 8667* (MO, **Stotler et al. 1998**); Pinogana distrito, Cruce de Mono, *Allen 9176* (MO, **Stotler et al. 1998**); Pirre Massif, *Allen 8770* (MO, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Shattuck 569 p.p.* (**Haynes 1933**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lutz trail, *Shattuck 569 p.p.* (F, **Clark 1956b**; **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3092* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3146* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, in the village, 8°30.7′N, 81°04.6′W, 400 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34332* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania glomerata (Lehm. et Lindenb.) Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 46, 1838 (Montagne 1838).

≡*Jungermannia glomerata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 21, 1833 (Lehmann 1833). Type: Brazil.

=*Frullania hilariana* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 45, 1838 (Montagne 1838), syn. fide Reiner (1988). Type: Brazil.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). CARTAGO: Alto de La Estrella, *Standley 39249* (**Herzog 1951**; **Dauphin 2005**); La Estrella, 26–27 Mar 1924, *Standley 39429* (**Clark and Svihla 1952b**; **Morales 1991** as *Frullania hilariana*).

Also reported from Mexico, the Caribbean, Western South America, Brazil, Southern South America.

Frullania grandifolia Steph., *Sp. Hepat. (Stephani)* 4: 684, 1911 (Stephani 1911b). Type: Mexico.

=*Frullania rabenhorstii* Steph., *Sp. Hepat. (Stephani)* 4: 601, 1911 (Stephani 1911b), syn. fide Uribe (2008). Type: Mexico.

?GUATEMALA. S. loc. (Bonner 1965 as *Frullania rabenhorstii*; Fulford and Sharp 1990 as *Frullania rabenhorstii*). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (Gradstein and Uribe 2011; Ellis et al. 2020; Gradstein 2021). SAN JOSÉ: Moravia cantón, Camino a la Hondura, 30 km NE de la universidad, 1,400 m, 28 Aug 1973, *Griffin et al. 375* (MEXU, MO, NY, **Uribe 2005, 2008**).

Also reported from Mexico, Western South America.

Frullania guatemalensis Steph., *Sp. Hepat. (Stephani)* 4: 497, 1911 (Stephani 1911b). Lectotype (Bonner 1965: 319): Guatemala, Alta Verapaz, prope Cobán, 1,350 m, Dec 1906, *Türckheim s.n.* (G-00066751 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=120813&lang=en, isolectotypes G, NY).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim* (NY, BM, **Pérez 2009**); Cobán, 1,350 m, Dec 1906, *Türckheim 5412*, *5413* (**Clark 1954d**); Cobán, 1,350 m, Dec 1906, *Türckheim*, hb. Levier 5411 (G http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=120813&lang=en, **TYPE**, **Stephani 1911b**; **Bonner 1965**; **Fulford and Sharp 1990**).

Also reported from Mexico.

Frullania hamiflora Herzog et L.Clark, *Bryologist* 56(3): 180, 1953 (Clark and Schultz 1953b). Holotype: Costa Rica, Alajuela, Fraijanes, *Standley & Torres 47636* (US-00070889 http://n2t.net/ark:/65665/335b4c841-0671-4c15-89b8-b88c8abac97d; isotypes G, JE-04000986 https://je.jacq.org/JE04000986).

=*Frullania macrorhyncha* Herzog et L.Clark, *Bryologist* 56(4): 283, 1953 (Clark and Schultz 1953a), syn. fide Stotler (1969). Holotype: Costa Rica, San José, Zurquí, *Standley & Valerio 48135* (US-00070894 http://n2t.net/ark:/65665/30b865f22-a4b3-400b-96c2-99d75683c5e8; isotype JE-04001005 https://je.jacq.org/JE04001005).

HONDURAS. S. loc. (Fulford and Sharp 1990). FRANCISCO MORAZÁN: Distrito Central municipio, La Montañita, 1,500 m, *Standley 1628* (F, **Stotler 1969**).

COSTA RICA. S. loc. (Cole 1982, 1983; **Fulford and Sharp 1990**). ALAJUELA: Alajuela cantón, Fraijanes, 1,500–1,700 m, 12–13 Feb 1926, *Standley & Torres 47636* (US-00070889 http://n2t.net/ark:/65665/335b4c841-0671-4c15-89b8-b88c8abac97d, **TYPE**, **Clark and Schultz 1953b**; **Bonner 1965**; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, 13 Feb 1926, *Standley & Valerio 48135* (US-00070894 http://n2t.net/ark:/65665/30b865f22-a4b3-400b-96c2-99d75683c5e8, **TYPE** of *Frullania macrorhyncha*, **Clark and Schultz 1953a** as *Frullania macrorhyncha*; **Bonner 1965** as *Frullania macrorhyncha*; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**).

Also reported from Mexico.

Frullania intumescens (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 460, 1845 (Gottsche et al. 1845a) var. ***intumescens***.

≡*Jungermannia intumescens* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 52, 1834 (Lehmann 1834). Type: Jamaica.

=*Lejeunea clandestina* Nees et Mont., *Ann. Sci. Nat., Bot.*, ser. 2, 5: 59, 1836 (Nees and Montagne 1836), syn. fide Gradstein et al. (2003). Type: Peru.

≡*Frullania clandestina* (Nees et Mont.) Nees, *Syn. Hepat.*: 457, 1845 (Gottsche et al. 1845a).

=*Frullania cucullata* Lindenb. et Gottsche, *Syn. Hepat.*: 782, 1847 (Gottsche et al. 1847), syn. fide Stotler (1969). Type: Mexico.

=*Frullania longicollis* Lindenb. et Gottsche, *Syn. Hepat.*: 783, 1847 (Gottsche et al. 1847), syn. fide Stotler (1969). Type: Mexico.

=*Frullania dubia* Lindenb. et Hampe, *Linnaea* 24(6): 641, 1851 (Hampe 1851a), syn. fide Stotler (1969). Lectotype (Stotler 1969: 446): Costa Rica, s. loc., *Oersted 9981* (C).

=*Frullania fallax* Steph. *Sp. Hepat. (Stephani)* 4: 495, 1911 (Stephani 1911b), nom. illeg. (ICN2018 Art. 53.1; non Gottsche et al. 1845b), syn. fide Stotler (1969). Lectotype: Bolivia.

≡*Frullania fuscobrunnea* Steph., *Sp. Hepat. (Stephani)* 6: 570, 1924 (Stephani 1924), nom. nov.

GUATEMALA. S. loc. (**Stephani 1911b**; Bonner 1965 also as *Frullania fuscobrunnea*; Fulford and Sharp 1990; Schuster 1992a). ALTA VERAPAZ: Tamahú municipio, above Tamahú, 900–1,200 m, 5 Apr 1939, *Standley 70947* (**Clark and Svihla 1952a**). BAJA VERAPAZ: S. loc. (**Pérez 2009**); Santa Rosa, 1,600 m (**Freire 2006**); Santa Rosa, 1,600 m, *Türckheim* (NY, **Stotler 1969**).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, 14°33′N, 88°38′W, 1,740–2,040 m, 10 May 1992, *Allen 11867*, det. Atwood Jun 2017 (MO-5227667! https://tropicos.org/specimen/90094412, **this publication**).

COSTA RICA. Cordillera de Talamanca, *Kappelle 1823* (CR, **Kappelle 1996**); S. loc. (Stephani 1911b as *Frullania cucullata*, *Frullania dubia*, and *Frullania longicollis*; Frye and Clark 1947 as *Frullania cucullata*; Clark and Svihla 1948a as *Frullania cucullata*; Bonner 1965 as *Frullania cucullata* and *Frullania longicollis*; Cole 1982, 1983 also as *Frullania cucullata*; **Fulford and Sharp 1990**; Schuster 1992a also as *Frullania cucullata*; Dauphin 2005; Gradstein 2021); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851** as *Frullania dubia*); S. loc., *Oersted 9981* (C, **Morales 1991**; **Dauphin 2005**); S. loc., *Oersted* (YU, G, S, **TYPE** of *Frullania dubia*, **Hampe 1851a** as *Frullania dubia*; **Polakowsky 1879** as *Frullania dubia*; **Dauphin 2005**). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47746* (**Herzog 1951** as *Frullania longicollis*); Alajuela

cantón, Viento Fresco, 1,600–1,900 m, 13 Feb 1926, *Standley & Torres 47746* (**Clark and Svihla 1952a**; **Morales 1991**; **Dauphin 2005**); San Ramón cantón, Piedades (**Morales 1991**); San Ramón cantón, Piedades, Jun 1900, *Brenes 9410* (FH, **Clark 1958b** as *Frullania longicollis*). CARTAGO: Cartago cantón, El Muñeco, S of Navarro, 1,400 m, *Standley 33937* (**Morales 1991**; **Dauphin 2005**; also reported as *Frullania closterantha* by Herzog 1951, see below); Paraíso cantón, Jardín Lankester, *Griffin & Morales C152* (FLAS, USJ, **Morales 1991**; **Dauphin 2005**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W (Dauphin and Grayum 2005); La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, *Dauphin et al. 3302*, *3306*, *3313*, *3346.1*, det. Gradstein (CR, GOET, **Dauphin 2005**). HEREDIA: Barva cantón, Barva forest, *Pittier 6010* (**Stephani 1893c** as *Frullania dubia*; **Morales 1991**; **Dauphin 2005**); Barva cantón, Barva forest, 10 Jan 1890, *Pittier 2325* (FH, **Clark 1958a** as *Frullania dubia*); Heredia cantón, Vara Blanca, 1941, *Svihla 41-485*, *41-487* (**Clark and Frye 1945** as *Frullania cucullata*); San Isidro cantón, Yerba Buena, *Standley 33937* (**Dauphin 2005**); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, 22–28 Feb 1928, *Standley & Valerio 49914* (**Herzog 1951** as *Frullania longicollis*; **Clark and Svihla 1952a**; **Morales 1991**). PUNTARENAS: Buenos Aires cantón, Alto Hacum, *Tonduz* (NY, **Stotler 1969**; **Morales 1991**; **Dauphin 2005**); Buenos Aires cantón, Boruca, *Tonduz 15523* (**Evans 1914a** as *Frullania cucullata*); Buenos Aires cantón, Boruca, *Tonduz* (NY, **Stotler 1969**; **Morales 1991**); Cerro Vueltas, 3,000 ft (914 m), 1969, *Gómez-Pignataro 2117* (R, **this publication**); Monteverde (Morales 1991); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-17* (R, **Reed and Robinson 1971** as *Frullania cucullata*; **Dauphin 2005**). SAN JOSÉ: Vásquez de Coronado cantón, between Las Nubes and San Isidro de Coronado, 1,420–1,800 m, *Standley 38869* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1945, *Echeverria 95* (**Morales 1991**; **Dauphin 2005**; also reported as *Frullania closterantha* by Clark and Mullen 1947, see below); Vásquez de Coronado cantón, San Isidro, 1941, *Svihla 41-504* (**Clark and Frye 1945** as *Frullania cucullata*).

PANAMA. S. loc. (**Mitten 1854b** as *Frullania cucullata*; Frye and Clark 1947 as *Frullania cucullata*; Clark and Svihla 1948a as *Frullania cucullata*; Iverson 1963 as *Frullania cucullata*; Bonner 1965 as *Frullania cucullata* and *Frullania longicollis*; **Stotler 1969**; Fulford and Sharp 1990; Schuster 1992a also as *Frullania cucullata*; Stotler et al. 1998 as *Frullania cucullata*). CHIRIQUÍ: Boquete distrito, Caldera, *Salazar Allen et al. 881* (PMA, **Stotler et al. 1998**); Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 757 p.p.*, *770* (PMA, **Stotler et al. 1998**); Boquete, 1940, *Svihla 40-402*, *40-411*, *40-416*, *40-424*, *40-438*, *40-444* (**Clark and Frye 1945** as *Frullania cucullata*; **Stotler et al. 1998** as *Frullania cucullata*); Tierras Altas distrito, Volcán, N of Hotel Dos Ríos, 500 m, *Salazar Allen 5286b* (PMA, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COLÓN: Colón distrito, Juan Mina, 1 Aug 1950, *Meyer 221* (TENN, **Crum and Arzeni 1953** as *Frullania cucullata*; **Stotler et al. 1998** as *Frullania cucullata*); Colón distrito, Juan Mina, 1 Aug 1950, *Meyer 98* (TENN, **Crum and Arzeni 1953** as *Frullania cucullata*; **Stotler et al. 1998** as *Frullania cucullata*). ?PANAMA WEST: Capira distrito, Cruces (Stotler et al. 1998 as *Frullania cucullata*). Note: We are not aware of any firsthand report from Panama West. PANAMA: Panamá distrito, Cerro Jefe, 2 km before the top of Cerro Jefe on the south side, *Martínez 880* (PMA, **Stotler et al. 1998**).

COCOS I. Chatham Bay, 28 Jun 1932, *Howell 228 p.p.* (CAS, **Clark 1953a** as *Frullania cucullata*); Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 947*, det. G. Dauphin Apr 2021 (USJ-47232!, CR-4468431!, W!, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=13312&Z_CHK=64320, **this publication** [in hb. USJ and GOET det. as *Frullania mucronata* by S. R. Gradstein]); Río Genio, 5°32′57″N, 87°03′38″W, 0–5 m, *Dauphin 952*, det. G. Dauphin Apr 2021 (USJ-47228!, CR-4468435!, W!, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=13310&Z_CHK=63808, **this publication** [in hb. USJ and GOET det as *Frullania mucronata* by S. R. Gradstein]); Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 953*, det. G. Dauphin Apr 2021 (USJ-47230!, CR-4468432!, W!, **this publication**); S. loc. (Iverson 1963 as *Frullania cucullata*; Fosberg and Klawe 1966 as *Frullania cucullata*; Dauphin 1995, 1999, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Wafer Bay, 28 Jun 1932, *Howell 229* (CAS, **Clark 1953a** as *Frullania cucullata*).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania intumescens var. ***closterantha*** (Spruce) Gradst. et Pócs, Nova Hedwigia 112(1/2): 58, 2021 (Gradstein and Pócs 2021).

≡*Frullania closterantha* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 51, 1884 (Spruce 1884). Type: Ecuador.

GUATEMALA. S. loc. (**Stephani 1911b** as *Frullania closterantha*; Clark and Mullen 1947 as *Frullania closterantha*; Bonner 1965 as *Frullania closterantha*; Winkler 1967 as *Frullania closterantha*). QUETZALTENANGO: S. loc., *Vogel B-9028* (MO, Pérez 2009 as *Frullania closterantha*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/23/3* (**Winkler 1967** as *Frullania closterantha*).

COSTA RICA. S. loc. (Stephani 1911b as *Frullania closterantha*; Clark and Svihla 1948a as *Frullania closterantha*; Bonner 1965 as *Frullania closterantha*; Winkler 1967 as *Frullania closterantha*; Cole 1982, 1983 as *Frullania closterantha*). CARTAGO: Cartago cantón, El Muñeco, S of Navarro, 1,400 m, *Standley 33937* (**Herzog 1951** as *Frullania closterantha*). SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 1945, *Echeverria 95* (**Clark and Mullen 1947** as *Frullania closterantha*).

?PANAMA. S. loc. (Clark and Svihla 1948a as *Frullania closterantha*). Note: We are not aware of any firsthand report from Panama.

Also reported from Mexico, Northern South America, Western South America.

Frullania kunzei (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 449, 1845 (Gottsche et al. 1845a) var. ***kunzei***.

≡*Jungermannia kunzei* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 50, 1834 (Lehmann 1834). Type: Cuba.

=*Frullania neesii* Lindenb., *Syn. Hepat.*: 450, 1845 (Gottsche et al. 1845b), syn. fide Gradstein and Costa (2003). Type: Brazil.

=*Frullania ecuadorensis* Steph., *Sp. Hepat. (Stephani)* 4: 526, 1911 (Stephani 1911b), syn. fide Gradstein and Pérez (2021). Type: Ecuador.

=*Frullania galapagona* Steph., *Sp. Hepat. (Stephani)* 4: 532, 1911 (Stephani 1911b), nom. illeg. (ICN2018 Art. 53.1; hom. illeg. non Ångström 1873), syn. with *Frullania ecuadorensis* fide Stotler (1969). Lectotype (Bonner 1965: 309; see also Stotler 1969 as "type") or possibly holotype: Cocos Island, *Pittier 1902* (G-00067435 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119009&lang=en).

≡*Frullania decipiens* Beauverd, *Sp. Hepat. (Stephani)* 6: 570, 1924 (Stephani 1924), nom. nov. for *Frullania galapagona* Steph. 1911.

GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Frullania neesii*; Oliveira-e-Silva and Yano 2000 as *Frullania neesii*); S. loc., *Duss 197* (G, Stotler 1969 as type of *Frullania minima*, but that is from Guadeloupe; Freire 2006 as type of *Frullania minima*, but that is from Guadeloupe). ALTA VERAPAZ: Santa Cruz Verapaz municipio, above Santa Cruz, *Standley 71052* (NY, Pérez 2009). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 190, 265* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). Note: Stotler (1969) stated that the type of *Frullania minima* is from Guatemala. However, it was collected in Guadeloupe. Several of the reports from Guatemala as *Frullania neesii* without further specification may be based on this error.

HONDURAS. S. loc. (Fulford 1987 as *Frullania neesii*; Fulford and Sharp 1990 as *Frullania neesii*; Oliveira-e-Silva and Yano 2000 as *Frullania neesii*). FRANCISCO MORAZÁN: Distrito Central municipio, La Montanita, 1,500 m, *Standley 12394 p.p.* (F, **Stotler 1969** as *Frullania neesii*).

COSTA RICA. S. loc. (Fulford 1987 as *Frullania neesii*; Fulford and Sharp 1990 as *Frullania neesii*; Oliveira-e-Silva and Yano 2000 as *Frullania neesii*); S. loc., *Brenes* (F, **Stotler 1969** as *Frullania neesii*; **Morales 1991** as *Frullania neesii*). ALAJUELA: San Ramón, *Brenes* (**Dauphin 2005**). PUNTARENAS: Monteverde Cloud Forest (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, Sillett et al. 1995 as *Frullania* cf. *neesii*). SAN JOSÉ: Vásquez de Coronado cantón, San Isidro, *Standley 34017* (**Morales 1991** as *Frullania neesii*).

PANAMA. BOCAS DEL TORO: Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34508* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350 m, *Schäfer-Verwimp & Verwimp 34338/B* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022** as *Frullania* cf. *kunzei*). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31041*(JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Juan Diaz, *Cornman 3022* (MO, **Stotler 1969** as *Frullania ecuadorensis*; **Stotler et al. 1998** as *Frullania ecuadorensis*). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30853* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (**Stephani 1911b** as *Frullania galapagona*; Clark 1953a as *Frullania decipiens*; Fosberg and Klawe 1966 as *Frullania decipiens*; Dauphin 1995, 1999, 2005, all as *Frullania ecuadorensis*); S. loc., *Pittier* (G-00047702 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=159230&lang=en, **TYPE** of *Frullania galapagona*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Frullania ecuadorensis*).

Also reported from North-Central USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania laxiflora Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 26, 1884 (Spruce 1884). Type: Ecuador.

?GUATEMALA. S. loc. (Stephani 1910a; Evans 1914b as *Frullania laxiflora* var. *laxiflora*; Herrera 1921, 1926; Clark 1959; Bonner 1965). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (Gradstein 2021). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9517* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**).

Also reported from Northern South America, Western South America, Southern South America.

Frullania levieri Steph., *Sp. Hepat. (Stephani)* 4: 388, 1910 (Stephani 1910a). Lectotype (Bonner 1965: 352) or possibly holotype: Guatemala, Alta Verapaz, Cobán, 1,650 m, Jun 1908, *Türckheim s.n.* (G-00067108 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113757&lang=en).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,650 m, Jun 1908, *Türckheim s.n.* (G-00067108 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113757&lang=en, **TYPE**, **Stephani 1910a**; **Bonner 1965**).

Not found outside Central America.

Frullania macrocephala (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 460, 1845 (Gottsche et al. 1845a).

≡*Jungermannia macrocephala* Lehm. et Lindenb., *Nov. Stirp. Pug. 5*: 20, 1833 (Lehmann 1833). Type: Peru.

=*Frullania strobilantha* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 48, 1884 (Spruce 1884), syn. fide Stotler (1969). Type: Peru.

=*Frullania costaricensis* Steph., *Sp. Hepat. (Stephani)* 4: 512, 1911 (Stephani 1911b), syn. fide Stotler (1969). Lectotype (Bonner 1965: 275; see also Stotler 1969) or possibly holotype: Costa Rica, *Pittier 5* (G-00067105 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113658&lang=en).

=*Frullania bullatiflora* Steph. *Sp. Hepat. (Stephani)* 4: 513, 1911 (Stephani 1911b), syn. fide Gradstein and Hekking (1979). Type: Colombia.

HONDURAS. S. loc., *Yuncker 6590* (DPU, **Stotler 1969**).

COSTA RICA. S. loc. (Clark 1955a as *Frullania strobilantha*; Cole 1982, 1983); S. loc., 1,600 m, *Pittier 5* (G-00067105, **TYPE** of *Frullania costaricensis*, **Stephani 1911b** as *Frullania costaricensis*; **Bonner 1965** as *Frullania costaricensis*; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, La Palma (**Morales 1991**; Dauphin 2005); Moravia cantón, La Palma, 1,600 m, 3 Feb 1924, *Standley 32953* (US, **Clark 1954b** as *Frullania bullatiflora*).

PANAMA. S. loc. (Stephani 1911b as *Frullania strobilantha*; Clark 1955a as *Frullania strobilantha*; Bonner 1965 as *Frullania strobilantha*; Stotler et al. 1998); S. loc., 1906, *Hélion* (PC, **Stotler et al. 1998**); S. loc., 1907, *Hélion* (NY, **Stotler 1969**). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30966* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,270 m, *Salazar Allen et al. 646*, *647* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34629* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Frullania microcephala Gottsche, *Mex. Leverm.*: 251, 1863 (Gottsche 1863). Type: Mexico.

Note: *Frullania microcephala* is a doubtful taxon described from Mexico. The reports from Costa Rica and Panama are not supported by any other data and are probably all based on the unsupported statement in Bonner (1965).

GUATEMALA. S. loc. (Bonner 1965; Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, 1,600 m, Jan 1908, *Türckheim 5595* (**Clark 1954c**).

?COSTA RICA. S. loc. (Bonner 1965; Fulford and Sharp 1990). Note: We are not aware of any firsthand report from Costa Rica.

?PANAMA. S. loc. (Bonner 1965; Fulford and Sharp 1990; Stotler et al. 1998). Note: We are not aware of any firsthand report from Panama.

Also reported from Mexico, Brazil.

Frullania microrhyncha L.Clark et Svihla, *Bryologist* 53(1): 63, 1950 (Clark and Svihla 1950d). Holotype: Panama, near Cruces, s. coll. (NY-01047662 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1151501).

PANAMA. PANAMA WEST: Capira distrito, Cruces, *Clark & Svihla* (**Stotler et al. 1998**); S. loc. (NY, **Clark and Svihla 1950d**).

Also reported from Western South America, Southern South America.

Frullania mirabilis J.B.Jack et Steph., *Hedwigia* 31(1): 15, 1892 (Jack and Stephani 1892). Type: Ecuador.

=*Frullania pendulostyla* Steph., *Sp. Hepat. (Stephani)* 6: 547, 1924 (Stephani 1924), syn. fide (Yuzawa 1991). Type: Ecuador.

COSTA RICA. S. loc. (Stephani 1911b; **Stotler 1969** as *Frullania pendulostyla*; Hattori 1973; Cole 1982, 1983, both as *Frullania 'pendulosa'*; Dauphin 2005; Gradstein and Uribe 2011, 2016; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014; Gradstein 2021; Gradstein and Pérez 2021; Oliveira-da-Silva et al. 2022). ALAJUELA: San Ramón, *Brenes 16205* (F, **Stotler 1969** as *Frullania pendulostyla*; **Morales 1991** as *Frullania pendulostyla*; **Dauphin 2005**). CARTAGO: Alto de La Estrella, *Standley 39056*, *39074* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**). HEREDIA: Heredia cantón, Finca Isla Bonita, Vara Blanca, Atlantic slope, ~5,500 ft (1,676 m), 2 Dec 1947, *Svihla 47-951*, *47-997* (**Clark and Svihla 1948c**; **Morales 1991**); San Isidro cantón, Cerro Caricias, 2,000–2,400 m, *Standley 52173* (**Herzog 1951**; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, *Standley 52171* (**Morales 1991**); San Isidro cantón, Cerro Zurquí, *Dodgrtothers 7926* (NY, **Stotler 1969** as *Frullania pendulostyla*; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50290* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49844b*, *50029* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 106* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Cerro Zurquí, *Dodgrtothers 7922*, *7926* (NY, **Stotler 1969** as *Frullania pendulostyla*; **Morales 1991** as *Frullania pendulostyla*; **Dauphin 2005**); Dota cantón, Laguna de La Chonta, NE of Sta María de Dota, 2,000–2,100 m, *Standley 42341* (**Herzog 1951**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34493* (JE, **Schäfer-Verwimp 2014**). ?PANAMA WEST: S. loc. (He et al. 2016). Note: We are not aware of any firsthand report from Panama West.

Also reported from Northern South America, Western South America, Brazil.

Frullania montagnei Gottsche, *Syn. Hepat.* 3: 456, 1845 (Gottsche et al. 1845a). Type: French Guiana.

=*Frullania tuerckheimii* Steph., *Sp. Hepat. (Stephani)* 4: 508, 1911 (Stephani 1911b), syn. fide Stotler (1969). Lectotype (Bonner 1965: 457; see also Stotler 1969: 453 as "type"): Guatemala, Baja Verapaz, Santa Rosa, in truncis quercinis inter Macromitria, Dec 1906, *Türckheim*, hb. Levier 5054 (G-00114945 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=165943&lang=en, isolectotypes S-B24321 https://herbarium.nrm.se/specimens/B24321, NY-1047687 https://sweetgum.nybg.org/science/vh/specimen-details/?irn=1153009, NY-1047688).

=*Frullania virillana* Steph., *Sp. Hepat. (Stephani)* 4: 528, 1911 (Stephani 1911b), syn. fide Stotler (1969). Lectotype (Bonner 1965: 465; see also Stotler 1969: 453 as "type") if not holotype: Costa Rica, San José, Río Virilla, *Tonduz s.n.* (G-00114347 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=165723&lang=en).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim 5414* (G, **Stotler 1969**; **Freire 2006**; **Pérez 2009**); Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009 as *Frullania tuerckheimii*). BAJA VERAPAZ: S. loc. (**Stephani 1911b** as *Frullania tuerckheimii*); S. loc., *Türckheim* (NY, Pérez 2009 as *Frullania 'tuerckheimii'*); Santa Rosa, *Türckheim 5057* (G, **TYPE** of *Frullania tuerckheimii*, **Bonner 1965** as *Frullania tuerckheimii*; **Stotler 1969**; **Freire 2006**; **Pérez 2009**); Santa Rosa, 1,600 m, Dec 1906, *Türckheim 5054* (NY, **Stotler 1969**; **Freire 2006**).

***BELIZE.** *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 6 Dec 1996, *Allen 18016*, det. Atwood and Dauphin Jun 2017 (MO-52240003! https://tropicos.org/specimen/90094394, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000). *PUNTARENAS: Coto Brus cantón, San Vito, 4 mi S of San Vito, *Koch 4954*, det. Dauphin 2015 (CR!, **this publication**). SAN JOSÉ: San Vicente, Río Virilla, *Tonduz 6207* (G-00114347, **TYPE** of *Frullania virillana*, **Stephani 1911b** as *Frullania virillana*; **Bonner 1965** as *Frullania virillana*; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc., 1906, *Hélion* (PC, **Dugas 1928** as *Frullania tuerckheimii*).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Frullania moritziana Lindenb. et Gottsche, *Syn. Hepat.* 5: 782, 1847 (Gottsche et al. 1847). Type: Venezuela.

COSTA RICA. ALAJUELA: Poás Volcano, Aug 1977, *Griffin et al. 167* (FLAS-020504, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). CARTAGO: El Guarco cantón, La Cangreja, *Mata 38*, det. Dauphin (USJ, **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania nodulosa (Reinw., Blume et Nees) Nees, *Syn. Hepat.* 3: 433, 1845 (Gottsche et al. 1845a).

≡*Jungermannia nodulosa* Reinw., Blume et Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 217, 1825 (Reinwardt et al. 1824a). Type: Java.

=*Jungermannia replicata* Nees, *Fl. Brasil. Enum. Pl.* 1: 369, 1833 (Nees 1833b), syn. fide Kamimura (1961). Type: Brazil.

≡*Frullania replicata* (Nees) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 36, 1884 (Spruce 1884).

=*Frullania thuilleri* Nees, *Syn. Hepat.* 2: 434, 1845 (Gottsche et al. 1845a), syn. fide Verdoorn (1930). Type: Many syntypes from America and Asia.

=*Frullania nodulosa* f. *brachyantha* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 130, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Panamá, Rio Tapia, on tree, *Standley 32094* (US-04646383 http://n2t.net/ark:/65665/3e570cebc-fab8-4aa9-ac80-8ccdedfc9505). Note: The specimen in US is named *Frullania replicata* Nees and annotated as seen by L. Clark in 1957.

GUATEMALA. S. loc. (Clark and Svihla 1948a; Miller et al. 1983). EL PETÉN: La Libertad, 1933, *Lundell 2528* (**Clark and Svihla 1947b**). SAN MARCOS: Santa Teresa, 1933, *Lundell 2679* (**Clark and Svihla 1947b**).

***BELIZE.** *TOLEDO: Edwards Road beyond Columbia, 28 Jan 1948, *Gentle 6381* (MO, **Whittemore and Allen 1996**); San Antonio, *Gentle 7802*, det. Atwood and Dauphin Jun 2017 (MO-5228144! https://www.tropicos.org/specimen/90103148, **this publication**).

HONDURAS. S. loc. (Arnell 1956b; Miller et al. 1983); S. loc., 1911, *Hunt* (**Verdoorn 1930**). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55808* (**Herzog 1951**); Tela municipio, Lancetilla Valley, 20–600 m, 1928, *Standley* (**Verdoorn 1934b**).

COSTA RICA. S. loc. (Schiffner 1898a as *Frullania replicata*; Miller et al. 1983); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (S, NY, **Hampe 1851b** as *Frullania thuillieri*; **Müller 1851** as *Frullania thuillieri*; **Polakowsky 1879** as *Frullania thuillieri*). CARTAGO: Oreamuno cantón, Irazú, *Stork* (NICH, **Hattori 1980**). LIMÓN: Siquirres cantón, Cairo, Finca Hamburgo, 55 m, *Standley 47875*, *48738* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48674*, *48775 p.p.* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Siquirres cantón, Finca La Colombiana, *Standley 36867* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Boruca (**Tonduz 1895a** as *Frullania replicata*); Buenos Aires cantón, Boruca, 55 m, *Pittier 6072* (**Stephani 1893c** as *Frullania replicata*; **Morales 1991**; **Dauphin 2005**); Buenos Aires cantón, Boruca, 1891, *Pittier* (**Verdoorn 1930**).

PANAMA. S. loc. (Schiffner 1898a as *Frullania replicata*; Clark and Svihla 1948a; Miller et al. 1983; Stotler et al. 1998). PANAMA WEST: Capira distrito, Cruces (**Mitten 1854b** as *Frullania thuillieri*; Stotler et al. 1998). PANAMA: Panamá distrito, Río Tapia, 7 Dec 1923–11 Jan 1924, *Standley 32094* (**Clark and Svihla 1947b**; **Herzog 1951** as *Frullania nodulosa* f. *brachyantha*; **Stotler et al. 1998**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific,

Northwestern Pacific, the Caribbean, Northern South America, Western South America, Brazil.

Frullania obcordata (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 2: 447, 1845 (Gottsche et al. 1845b).

≡*Jungermannia obcordata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 51, 1834 (Lehmann 1834). Type: Guyana.

=*Frullania parasitica* Hampe, *Nov. Stirp. Pug.* 7: 11, 1838 (Lehmann 1838). Type: South America.

=*Frullania gymnotis* Nees et Mont, *Ann. Sci. Nat., Bot.*, ser. 2, 19: 257, 1843 (Montagne 1843a), syn. fide Gradstein and Hekking (1989). Type: "In Guyanâ."

=*Frullania caulisequa* auct. Note: As shown by Winter and Schäfer-Verwimp (2020), all reports of *Frullania caulisequa* from Central America belong to *F. obcordata*.

GUATEMALA. S. loc. (Fulford 1987 as *Frullania parasitica*). ALTA VERAPAZ: Cobán, Las Victorias National Park, 2002 (**Andersohn 2004** as *Frullania caulisequa*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Frullania caulisequa*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Frullania caulisequa*).

BELIZE. S. loc. (**Fulford 1938**; Frye and Clark 1947; Clark and Svihla 1948a; Whittemore and Allen 1996 as *Frullania caulisequa*; Schuster 1992a).

?HONDURAS. S. loc. (Clark 1958c as *Frullania gymnotis*; Lemos-Michel 1983 as *Frullania gymnotis*; Schuster 1992a as *Frullania gymnotis*). Note: We are not aware of any firsthand report from Honduras.

?NICARAGUA. S. loc. (Schuster 1992a as *Frullania gymnotis*). Note: We are not aware of any firsthand report from Nicaragua.

COSTA RICA. S. loc. (Jovet-Ast 1957, 1959, both as *Frullania gymnotis*; Clark 1958c as *Frullania gymnotis*; Bonner 1965 as *Frullania gymnotis*; Lemos-Michel 1983 as *Frullania gymnotis*; Miller et al. 1983 as *Frullania gymnotis*; Fulford 1987 as *Frullania parasitica*; Schuster 1992a as *Frullania gymnotis*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Frullania caulisequa*; Holz 2006 as *Frullania caulisequa*); Canal Zone (Schäfer-Verwimp 2014 as *Frullania caulisequa*). ALAJUELA: Poás Volcano, 5 Aug 1968, *Morales & Canessa 476* (Morales and Griffin 1983 as *Frullania* aff. *obcordata*; **Morales 1991** as *Frullania caulisequa*; **Dauphin 2005** as *Frullania caulisequa*); San Ramón cantón, Nectandra Cloud Forest, *Norris 110221* (UC, **Norris et al. 2017** as *Frullania gymnotis*). CARTAGO: Alvarado cantón, Coliblanco, ~1,950 m, 30 Apr–2 May 1906, *Maxon 259* (**Clark and Svihla 1948b** as *Frullania gymnotis*; **Morales 1991** as *Frullania caulisequa*; **Dauphin 2005** as *Frullania caulisequa*). HEREDIA: Heredia cantón, Finca Isla Bonita, Vara Blanca, Atlantic slope, 1,524 m, 2–3 Feb 1947, *Svihla 47-941*, *47-984*, *47-985*, *47-986*, *47-993*, *47-1006* (**Clark and Svihla 1948b** as *Frullania gymnotis*; **Morales 1991** as *Frullania caulisequa*; **Dauphin 2005** as *Frullania caulisequa*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Frullania caulisequa*); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Frullania caulisequa*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Frullania caulisequa*); Vásquez de Coronado cantón, San Isidro, *Standley 34017* (**Herzog 1951** as *Frullania parasitica*).

PANAMA. S. loc. (Clark 1958c as *Frullania gymnotis*; Lemos-Michel 1983 as *Frullania gymnotis*; Fulford 1987 as *Frullania parasitica*; Schuster 1992a as *Frullania gymnotis*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021** as *Frullania caulisequa*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Frullania caulisequa*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34511/A* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,380 m, *Schäfer-Verwimp & Verwimp 34363/C* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34765* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34166/A* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*). DARIÉN: S. loc. (Schäfer-Verwimp 2014 as *Frullania caulisequa*); ridge trail above Cana to Pirre Massif, 800–900 m, *Allen 8984* (MO, **Stotler et al. 1998** as *Frullania gymnotis*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Camino Wheeler 5–6, *Salazar Allen & Chung 4737b* (PMA, **Stotler et al. 1998** as *Frullania caulisequa*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3092* (PMA, **Dauphin et al. 2022**). PANAMA: Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 1 Aug 1950, *Meyer 131* (TENN, **Crum and Arzeni 1953** as *Frullania parasitica*; **Stotler et al. 1998** as *Frullania parasitica*). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34284* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*); Santa Fe distrito, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34326* (JE, **Schäfer-Verwimp 2014** as *Frullania caulisequa*).

COCOS I. S. loc. (Clark 1958c as *Frullania gymnotis*; Jovet-Ast 1959 as *Frullania gymnotis*; Fosberg and Klawe 1966 as *Frullania gymnotis*; Lemos-Michel 1983 as *Frullania gymnotis*; Miller et al. 1983 as *Frullania gymnotis*; Schuster 1992a as *Frullania gymnotis*; Dauphin 1995, 2005, both as *Frullania caulisequa*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Frullania caulisequa*); Wafer Bay, 28 Jun 1932, *Howell 231 p.p.* (CAS, **Clark 1953a** as *Frullania gymnotis*).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania obscura (Sw.) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 333, 1840 (Montagne 1840) var. ***obscura***.

≡*Jungermannia obscura* Sw., *Fl. Ind. Occid.* 3: 1869, 1806 (Swartz 1806). Type: Jamaica.

=*Jungermannia arecae* Spreng., *Neue Entdeck. Pflanzenk.* 2: 99, 1821 (Sprengel 1821), syn. fide Gradstein (2012). Type: Puerto Rico.

≡*Frullania arecae* (Spreng.) Gottsche, *Mexik. Leverm.*: 236, 1863 (Gottsche 1863).

=*Jungermannia hians* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 55, 1832 (Lehmann 1832), syn. fide Yuzawa (1991). Type: Mexico.

≡*Frullania hians* (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 414, 1845 (Gottsche et al. 1845a).

=*Frullania fusiflora* Steph., *Biblioth. Bot.* 87(2): 239, 1916 (Stephani 1916b), syn. fide Yuzawa (1991). Type: Bolivia.

GUATEMALA. S. loc. (WTU, Clark and Svihla 1948a as *Frullania arecae*; **Clark and Svihla 1956** as *Frullania arecae*; Fulford and Sharp 1990 as *Frullania* '*arecea*'). ALTA VERAPAZ: S. loc., *Pérez 196* (**Pérez 2009** as *Frullania arecae*); Senahú municipio, Finca Mocca, 1920, *Johnson 120* (YU, **Clark and Svihla 1947c** as *Frullania arecae*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Frullania arecae*). ESCUINTLA: Volcán de Agua, 2,700–3,000 m, 1905, *Maxon & Hay 3729a* (**Clark and Svihla 1947c** as *Frullania arecae*). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1196* (USCG, Pérez 2009 as *Frullania arecae*). QUETZALTENANGO: Esperanza, *Maxon & Hay 3352* (**Clark and Svihla 1947c** as *Frullania arecae*).

NICARAGUA. GRANADA: Granada municipio, Mombacho, 2,000 ft (610 m), *Oersted* (**Hampe 1851b** as *Frullania hians*; **Müller 1851** as *Frullania hians*).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Frullania arecae*; **Holz and Gradstein 2005b** as *Frullania arecae*); S. loc. (WTU, Evans 1914b as *Frullania hians*; Herrera 1921, 1926, both as *Frullania hians*; Pagán 1939b as *Frullania hians*; Clark and Svihla 1948a, **1956**, both as *Frullania arecae*; Fulford and Sharp 1990 as *Frullania arecae* '*arecea*'; Dauphin 2005 as *Frullania arecae* var. *arecae*). CARTAGO: Cartago cantón, El Muñeco, Navarro River, 1,400–1,500 m, 1926, *Standley & Torres 51133* (**Clark and Svihla 1947c** as *Frullania arecae*; **Morales 1991** as *Frullania fusiflora*; **Dauphin 2005** as *Frullania arecae* var. *arecae*); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 51132*, *51133* (S, **Yuzawa 1991** as *Frullania arecae*); Jiménez cantón, Juan Viñas (Tonduz 1895b as *Frullania hians*); Jiménez cantón, Juan Viñas, *Pittier 6039a* (**Stephani 1893c** as *Frullania hians*; **Morales 1991** as *Frullania arecae*; **Dauphin 2005** as *Frullania arecae* var. *arecae*). PUNTARENAS: Coto Brus (Dauphin 2005 as *Frullania arecae* var. *arecae*); Coto Brus cantón Las Cruces garden, ~4 km SSE of San Vito, ~1,300 m, *Sipman 11939* (U, **Yuzawa 1991** as *Frullania arecae*); Monteverde (Morales 1991 as *Frullania arecae*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Frullania arecae*); Monteverde, *James, W. 88*, *105* (**Dauphin 2005** as *Frullania arecae* var. *arecae*); Monteverde, Oct 1963, *James, W. 14* (R, **Reed and Robinson 1971** as *Frullania arecae*; **Dauphin 2005** as *Frullania arecae* var. *arecae*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 88*, *105* (R, **Reed and Robinson 1971** as *Frullania arecae*); S. loc. (**Merwin et al. 2001** as *Frullania arecae*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Frullania arecae*); Dota cantón, San Gerardo (Dauphin 2005 as *Frullania arecae* var. *arecae*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43163* (**Herzog 1951** as *Frullania hians*); Moravia cantón, La Palma, 1,400–1,550 m, *Maxon 470* (NY, **Clark and Svihla 1947c** as *Frullania arecae*; **Morales 1991** as *Frullania fusiflora*; **Dauphin 2005** as *Frullania arecae* var. *arecae*).

PANAMA. S. loc. (**Mitten 1854b** as *Frullania hians*; Stotler et al. 1998 as *Frullania arecae*; Alam and Srivastava 2009 as *Frullania arecae*). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Cerro Punta, Guadalupe, *Vinda 1566* (NY, **Yuzawa 1991** as *Frullania arecae*; **Stotler et al. 1998** as *Frullania arecae*); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020** as *Frullania arecae*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30753* (JE, **Schäfer-Verwimp 2014**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania obscura var. ***spiniloba*** (Steph.) Hentschel et von Konrat, *Phytotaxa* 220(2): 136, 2015 (Hentschel et al. 2015).

≡*Frullania spiniloba* Steph., *Sp. Hepat. (Stephani)* 4: 336, 1910 (Stephani 1910a). Type: Ecuador.

≡*Frullania arecae* var. *spiniloba* (Steph.) Yuzawa, *J. Hattori Bot. Lab.* 70: 269, 1991 (Yuzawa 1991).

COSTA RICA. SAN JOSÉ: Moravia cantón, La Palma, 1,400–1,550 m, *Maxon 470* (NY, **Yuzawa 1991** as *Frullania arecae* var. *spiniloba*; **Dauphin 2005** as *Frullania arecae* var. *spiniloba*).

PANAMA. S. loc. (Stephani 1910a as *Frullania spiniloba*; Evans 1914b as *Frullania spiniloba*; Clark and Svihla 1950c as *Frullania spiniloba*; **Fulford and Sharp 1990** as *Frullania spiniloba*; Stotler et al. 1998 as *Frullania spiniloba*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34492* (JE, **Schäfer-Verwimp 2014** as *Frullania spiniloba*); S. loc., *Hélion 414* (G hb. Lacouture, **Bonner 1965** as *Frullania spiniloba*).

Also reported from Mexico, the Caribbean, Western South America.

Frullania osculatiana De Not., *Mem. Reale Accad. Sci. Torino*, ser. 2, 16: 236, 1857 (De Notaris 1857). Type: Ecuador/Peru ("Colombia").

COSTA RICA. PUNTARENAS: Monteverde (Morales 1991); Monteverde, 4 Apr 1969, *James, W. 1969-91* (R, US, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, between Aserrí and Tarbaca, 1,600–1,900 m, 12 Feb 1924, *Standley 34121* (**Herzog 1951**; **Clark and Svihla 1953b**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, Alto de La Palma, *Griffin & Morales A26* (FLAS, **Morales 1991**; **Dauphin 2005**).

Also reported from Western South America.

Frullania paradoxa Lehm. et Lindenb., *Syn. Hepat.* 3: 462, 1845 (Gottsche et al. 1845a). Type: Tropical America s. loc.

=*Frullania flexicaulis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 53, 1884 (Spruce 1884), syn. fide Hentschel (2015). Type: Ecuador.

GUATEMALA. HUEHUETENANGO: San Juan Ixcoy municipio, Piedras de Captzin, 15°33′52″N, 91°29′54″W, 3,387 m, 2006, *Pérez et al. 1303* (USCG, Pérez 2009 as *Frullania flexicaulis*).

Also reported from Mexico, the Caribbean, Western South America, Brazil, Southern South America.

Frullania peruviana Gottsche, *Syn. Hepat.* 4: 465, 1846 (Gottsche et al. 1846). Type: Peru.

=*Frullania atrosanguinea* Taylor ex Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 39, 1884 (Spruce 1884), syn. fide Uribe (2008). Type: Ecuador.

=*Frullania haeckeriana* Lindenb., *Syn. Hepat.* 4: 465, 1846 (Gottsche et al. 1846), syn. fide Uribe (2008). Type: Peru.

=*Frullania piliflora* Steph., *Sp. Hepat. (Stephani)* 4: 598, 1911 (Stephani 1911b), syn. fide Uribe (2008). Lectotype (Bonner 1965: 401) if not holotype: Costa Rica, Heredia, C. de las Vueltas, 3,000 m, 1911, *Tonduz s.n.* (G-00067460 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119011&lang=en).

=*Frullania piliflora* Steph. var. *appendiculata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), syn. fide (Söderström et al. 2023b). Lectotype (Söderström et al. 2023b: 2): Costa Rica, Cartago, southern slope of Volcán de Turrialba, near the Finca del Volcán de Turrialba, altitude about 2,000–2,400 m, 22 Feb 1924, *Standley 35088* (JE-04004146 https://je.jacq.org/JE04004146, isolectotypes G-00265605 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=271882&lang=en, US-04646508 http://n2t.net/ark:/65665/30c6ff639-2fe7-4383-b919-296397863453).

=*Frullania piliflora* f. *subobtusis* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 129, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Prov. San Jose, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43711* (US-04646509 http://n2t.net/ark:/65665/33a1c75e8-2b89-4f35-84f8-7abe003a369e, labeled without indication of forma).

GUATEMALA. S. loc. (Stephani 1911b also as *Frullania haeckeriana*; Clark and Frye 1953; Bonner 1965 also as *Frullania haeckeriana*; Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, 1,350 m, Feb 1907, *Türckheim 5410* (NY, **Uribe 2005, 2008**).

HONDURAS. CORTÉS: San Pedro Sula municipio, Cusuco National Park, 22 km W de San Pedro Sula, 16 km S de Cuyamel, 1,600–2,000 m, 19 Mar 1993, *Allen 14234* (MO, **Uribe 2005, 2008**). LEMPIRA: Gracias municipio, Celaque National Park, 2,000–2,480 m, 18 Nov 1991, *Allen 11589*, *11590* (MO, **Uribe 2005, 2008**); Gracias municipio, Montaña de Celaque, Cerro Mojó, 2,849 m, 17 May 1992, *Allen 12269* (GOET, NY, **Uribe 2005**). OLANCHO: Catacamas municipio, Sierra de Algalta, Montana Babilonia, La Picucha, 2,354 m, 2 Feb 1992, *Allen 12754* (MO, **Uribe 2005, 2008**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (**Stephani 1911b** as *Frullania piliflora* and *Frullania atrosanguinea*; Clark and Svihla 1951b as *Frullania atrosanguinea*; Dauphin 2005 as *Frullania atrosanguinea* and *Frullania piliflora*); S. loc., *Schäfer-Verwimp et al. 24356* (GOET, **Larraín et al. 2015**). CARTAGO: El Guarco cantón, 3 de Junio, *Anton et al. AHH 170* (CR, **Dauphin 2005**); Paraíso cantón, Cerro Asunción, 3,350 m, 29 Dec 1978, *Sipman 11681*, *11682*, *11685*, *11686*, *11689*, *11691* (GOET, **Uribe 2005, 2008**); Turrialba cantón, Volcán Turrialba, S slope, near Finca, 2,000–2,400 m, 24 Feb 1924, *Standley 35088* (**Clark 1953c** as *Frullania piliflora*; **Morales 1991** as *Frullania piliflora*; **Dauphin 2005** as *Frullania piliflora*). PUNTARENAS: Monteverde, 1,500–1,550 m, 20 Feb 1992, *Ingram et al. 1367* (MO, **Uribe 2005, 2008**). SAN JOSÉ: Chirripó National Park, 26 Mar 1983, *Chaverri et al. 1019* (NY, **Uribe 2005, 2008**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43711* (**Herzog 1951** as *Frullania piliflora* f. *subobtusis*); Dota cantón, Cerro de Las Vueltas, 3,000 m, 1911, *Tonduz* (G-00067460, **Bonner 1965** as *Frullania piliflora*, **TYPE** of *Frullania piliflora*); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley & Valerio 43711* (US, **Clark 1953c** as *Frullania piliflora*; **Morales 1991** as *Frullania piliflora*; **Kappelle 1996** as *Frullania piliflora*; **Dauphin 2005** as *Frullania piliflora*); Dota cantón, San Gerardo (Dauphin 2005, s. lat.); Moravia cantón, Camino a La Hondura, *Griffin et al. 375* (FLAS, **Morales 1991** as *Frullania atrosanguinea*; **Dauphin 2005** as *Frullania atrosanguinea*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,400 m, *Chaverri et al. 1567* (GOET, **Uribe 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20–22 Mar 1924, *Standley 38421* (**Clark 1953c** as *Frullania piliflora*; **Morales 1991** as *Frullania piliflora*; **Dauphin 2005** as *Frullania piliflora*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31023* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,750 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30902* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las

Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34552*, *34556*, *34584* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania phalangiflora Steph., *Biblioth. Bot.* 87(2): 247, 1916 (Stephani 1916b). Type: Bolivia.

HONDURAS. S. loc. (Schäfer-Verwimp 2014). COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 14°48′N, 88°52′W, 1,740–2,040 m, 12 Mar 1993, *Allen 13887* (NY, **Uribe 2005, 2008**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30981/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Frullania pittieri Steph., *Primit. fl. costar.*: 113, 1893 (Stephani 1893c). Lectotype (Bonner 1965: 402; see also Stotler 1969: 465 as "type"): Costa Rica, San José, Forêts de La Palma, 18 Dec 1888, *Pittier 6037* (G-00067245 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=117884&lang=en, isolectotypes BR-5040109469532 https://www.botanicalcollections.be/specimen/BR5040109469532, PC-0102339 https://science.mnhn.fr/institution/mnhn/collection/pc/item/pc0102339).

COSTA RICA. S. loc. (Stephani 1911b; Cole 1982; Dauphin 2005; Gradstein and Uribe 2016). ALAJUELA: Poás Volcano, Aug 1977, *Griffin et al. 77* (FLAS-020505, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, La Hondura, 1924, *Standley 36406* (**Clark and Frye 1952**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Maxon 473* (NY, **Stotler 1969**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Pittier* (**Stotler 1969**); Tarrazú cantón, La Palma Forest, *Pittier* (G, **Morales 1991**; **Dauphin 2005**); Tarrazú cantón, La Palma Forest, ~1,600 m, *Standley 32937* (G, **Herzog 1951**; **Stotler 1969**; **Morales 1991**; **Dauphin 2005**); Tarrazú cantón, La Palma Forest, 1,550 m, 18 Dec 1888, *Pittier 6037* (G-00067245 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=117884&lang=en, BR-5040109469532, PC-0102339, **TYPE**, **Stephani 1893c**; **Bonner 1965**; **Morales 1991**; **Dauphin 2005**); Tarrazú cantón, La Palma Forest, 1924, *Standley 32958a* (**Herzog 1951**; **Clark and Frye 1952**; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 560 p.p.* (PMA, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850 m, *Salazar Allen 9436* (PMA, **Stotler et al. 1998**); Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850 m, *Salazar Allen 9437* (PMA, **Stotler et al. 1998**; **Hentschel et al. 2009**). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road, 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30742* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America(?), Western South America.

Frullania planifolia Steph., *Sp. Hepat.* (Stephani) 4: 337, 1910 (Stephani 1910a). Type: Venezuela.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Dauphin 2005; Gradstein and Holz 2005; Gradstein 1999a, 2021). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9732* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Frullania pluricarinata Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 168, 1864 (Gottsche 1864). Type: Colombia.

GUATEMALA. S. loc. (Gradstein and Cuvertino 2015; Gradstein 2021). HUEHUETENANGO: Huehuetenango municipio, Zaculeu ruins, 1,800 m, 8 Jan 1941, *Standley 82770* (NY, **Clark and Svihla 1950b**; **Yuzawa 1991**).

?PANAMA. ?Chiriquí: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022** as *Frullania* cf. *kunzei*). Note: We do not know of any positively identified specimen from Panama.

Also reported from South-Central USA, Mexico, Western South America, Southern South America.

Frullania rio-janeirensis (Raddi) Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 33(7): 88, 1876 (Ångström 1876) var. ***rio-janeirensis***.

≡*Frullanoides rio-janeirensis* Raddi, *Critt. Brasil.*: 13, 1822 (Raddi 1822). Type: Brazil.

=*Frullania arietina* Taylor ex Gottsche, Lindenb. et Nees, *Syn. Hepat.*: 413, 1845 (Gottsche et al. 1845b), syn. fide Haarbrink (1981). Type: Suriname.

GUATEMALA. S. loc. (Clark and Svihla 1948a; Bonner 1965; Fulford and Sharp 1990). ALTA VERAPAZ: S. loc., *Pérez 245* (USCG, Pérez 2009); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PETÉN: La Libertad municipio, Sabana San Francisco, 30 Mar 1933, *Lundell 2242a* (**Clark and Svihla 1945b**); La Libertad, 20 Mar 1933, *Lundell 2244* (**Clark and Svihla 1945b**).

BELIZE. S. loc. (**Fulford 1938** as *Frullania arietina*; Clark and Svihla 1945b, 1948a; Frye and Clark 1947; Schuster 1992a; Whittemore and Allen 1996).

HONDURAS. COMAYAGUA: Siguatepeque municipio, El Achiote, 1,350 m, *Yuncker et al. 6567* (NY, **Yuzawa 1991**).

NICARAGUA. S. loc., *Lindig 1743* (BM, **Yuzawa 1991**).

COSTA RICA. S. loc. (Frye and Clark 1947; Clark and Svihla 1948a; Bonner 1965; Fulford and Sharp 1990; Schuster

1992a). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700, 27 Aug 2003, *Dauphin et al. 3304* (CR, **Dauphin and Grayum 2005**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Entre San José y Heredia, Rio Torres, on bank of river between San Jose and Heredia, 5 Jul 1941, *Svihla 41-453* (**Clark and Svihla 1945b**; **Morales 1991**; **Dauphin 2005**); Entre San José y Heredia, Rio Torres, on bank of river between San Jose and Heredia, 5 Jul 1941, *Svihla 41-454* (**Clark and Svihla 1945b**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Frye and Clark 1947; Clark and Svihla 1948a; Bonner 1965; Fulford and Sharp 1990; Schuster 1992a; Stotler et al. 1998; Oliveira-e-Silva and Yano 2000). CHIRIQUÍ: Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 751 p.p.*, *751*, *757* (PMA, **Stotler et al. 1998**); Boquete, 3 Sep 1940, *Svihla 40-436* (**Clark and Svihla 1945b**); Boquete, 3 Sep 1940, *Svihla 40-443* (**Clark and Svihla 1945b**); Tierras Altas distrito, Cerro Punta, Guadalupe, 1,500 m, *Vinda 1566 p.p.* (PMA, **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen & Béliz 1378* (NY, **Yuzawa 1991**); Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen et al. 1378* (NY, PMA, **Stotler et al. 1998**). PANAMA: Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 1 Aug 1950, *Meyer 129* (TENN, **Crum and Arzeni 1953**; **Stotler et al. 1998**); Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 1 Aug 1950, *Meyer 44* (TENN, **Crum and Arzeni 1953**; **Stotler et al. 1998**).

COCOS I. Río Genio, 5°32′57″N, 87°03′38″W, 0–5 m, *Dauphin 944*, det. G. Dauphin Apr 2021 (USJ-47231!, CR-4468430!, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=12038&Z_CHK=64322, W-0207439! https://w.jacq.org/W0207439, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 5 m, 15 Feb 1994, *Dauphin 944*, det. Gradstein (USJ, U, **Dauphin 1995**, **1999**, **2005**); S. loc. (Fosberg and Klawe 1966; Morales 1991); Wafer Bay, 28 Jun 1932, *Howell 277 p.p.* (CAS, **Clark 1953a**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, South Africa(?), China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific(?), Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania riparia Hampe, *Pugillus* 7: 14, 1838 (Lehmann 1838). Type: USA.

NICARAGUA. CHINANDEGA: El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 246 p.p.* (CAS, **Clark 1953a**).

Also reported from Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Siberia, Western Asia, China(?), Indian Subcontinent(?), New Zealand, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Western South America.

Frullania semivillosa Lindenb. et Gottsche, *Syn. Hepat. 5*: 774, 1847 (Gottsche et al. 1847). Type: Mexico.

PANAMA. S. loc. (**Mitten 1854b**; Schuster 1992a; Stotler et al. 1998). PANAMA: Panamá distrito, Taboga Island, Apr 1846, *Seemann* (NY, **Clark 1955b**; **Stotler et al. 1998**); Panamá distrito, Taboga, *Seemann* (NY, **Clark 1955b**; **Stotler et al. 1998**).

Also reported from Mexico, Brazil.

Frullania setigera Steph., *Hedwigia* 33(3): 159, 1894 (Stephani 1894b). Type: Brazil.

GUATEMALA. S. loc. (Fulford and Sharp 1990; Benitez et al. 2013; Schäfer-Verwimp 2014; Sierra et al. 2019b; Oliveira-e-Silva and Yano 2000). ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 390* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). QUICHÉ: S. loc., *Pérez 2328* (USCG, Pérez 2009). SOLOLÁ: Volcán Tolimán, *Steyermark 47572* (F, **Stotler 1969**; **Freire 2006**; **Pérez 2009**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 20 Feb 1997, *Allen 18969*, det. Atwood and Dauphin Jun 2017 (MO-5224001! https://tropicos.org/specimen/90094396, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford and Sharp 1990; Benitez et al. 2013; Schäfer-Verwimp 2014; Sierra et al. 2019b; Oliveira-e-Silva and Yano 2000). CARTAGO: Alvarado cantón, Coliblanco, 1,950 m, *Maxon 226* (NY, **Stotler 1969**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Sierra et al. 2019b). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30981/A* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34321* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Frullania sphaerocephala Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 17, 1884 (Spruce 1884). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). SAN JOSÉ: Chirripó National Park, *Chaverri et al. 1243*, det. Gradstein (Morales 1991 as *Frullania* cf. *sphaerocephala*; **Dauphin 2005**).

Also reported from Mexico, Northern South America, Western South America.

Frullania stenostipa Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 29, 1884 (Spruce 1884). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Gradstein 2021). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Western South America, Southern South America.

Frullania subtilissima (Nees ex Mont.) Lindenb., *Syn. Hepat.* 3: 443, 1845 (Gottsche et al. 1845a).

≡*Frullania atrata β subtilissima* Nees ex Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 333, 1840 (Montagne 1840). Lectotype: French Guiana.

≡*Frullania atrata* var. *subtilissima* (Nees ex Mont.) L.Clark et Svihla, *Bryologist* 51(3): 23, 1948 (Clark and Svihla 1948a).

=*Frullania exilis* Taylor, *London J. Bot.* 5: 405, 1846 (Taylor 1846a), syn. fide Gradstein (2021). Type: Guyana.

=*Frullania apiculata* auct. non (Reinw., Blume et Nees) Nees, syn. fide Gradstein (2021).

GUATEMALA. S. loc. (Clark and Svihla 1948a). ALTA VERAPAZ: Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Frullania* cf. *apiculata*).

***HONDURAS.** *TOLEDO: Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 890 m, 22 Feb 1997, *Allen 19044*, det. Atwood and Dauphin Jun 2017 (MO-4417199 https://tropicos.org/specimen/90046837, **this publication**).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 1,600–2,375 m, 12 May 1992, *Allen 11997B p.p.*, det. Atwood May 2017 (MO-6699954!, **this publication** as *Frullania apiculata*).

***NICARAGUA.** *ATLÁNTICO SUR: 6.7 km SSE of Nawawas, at ford of Río Kurinwasito, 12°33′47″N, 84°41′21″W, 113 m, 19 Feb 2019, *Stevens & Calero 40988*, det. J. Atwood 2019 (MO-3144637! https://tropicos.org/specimen/103097630, HULE https://tropicos.org/specimen/101121159, **this publication**).

COSTA RICA. S. loc. (Clark and Svihla 1948a). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, Sillett et al. 1995 as *Frullania* cf. *exilis*); Monteverde, 1,550 m, *Gradstein & Solano 9525*, *9555* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Península de Osa, Rincón, Centro Boscosa, 29 Oct 1993, *Dauphin 788*, det. Gradstein (USJ, **Dauphin 2005** as *Frullania apiculata*); S. loc. (**Merwin et al. 2001**).

PANAMA. BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Hernández-Rodríguez 795*, det. Hernández-Rodríguez Aug 2017 (PMA, **this publication**); Punta Donato (9°22′45.5″N, 82°22′07.8″W; **Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, SW of camping site, 1,000–1,270 m, *Salazar Allen et al. 645* (PMA, **Stotler et al. 1998** as *Frullania apiculata*); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020** as *Frullania apiculata*).

***COCOS I.** Boca Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 948 p.p.*, det. G. Dauphin Mar 2021 (USJ-47207!, CR-4468309!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 969 p.p.*, det. G. Dauphin Apr 2021 (USJ-47194!, CR-4468408!, W!, **this publication**); Fila sobre Valle Wafer, 5°32′57″N, 87°03′56″W, 180 m, 25 Jan 1990, *Dauphin 1079*, det. G. Dauphin Apr 2021 (USJ-47229!, CR-4468433! W-0207434! https://w.jacq.org/W0207434 as *Frullania exilis*, **this publication**).

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil.

Frullania subtruncata Steph., *Sp. Hepat. (Stephani)* 4: 389, 1910 (Stephani 1910a). Lectotype (Bonner 1965: 441): Panama, Chiriquí, *Hélion 427* (G-00069088 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115550&lang=en, isolectotypes PC-0104316, PC-0104317, PC-0102215).

?COSTA RICA. S. loc. (Bonner 1965). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. CHIRIQUÍ: S. loc., *Hélion 427* (G-00069088 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115550&lang=en, **TYPE, Stephani 1910a; Bonner 1965**; Stotler et al. 1998).

Not found outside Central America.

Frullania tetraptera Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 47, 1838 (Montagne 1838). Type: Chile.

CENTRAL AMERICA. S. loc. (Gradstein and Uribe 2011).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullania triquetra Lindenb. et Gottsche, *Syn. Hepat.* 5: 780, 1847 (Gottsche et al. 1847). Type: Mexico.

GUATEMALA. S. loc. (Fulford and Sharp 1990). QUETZALTENANGO: Cumbre de Tuilacán, 2,400 m, *Standley 67838* (NY, **Stotler 1969**; **Freire 2006**; **Pérez 2009**).

Also reported from Mexico, Western South America, Brazil.

Frullania uleana Steph., *Hedwigia* 33(3): 155, 1894 (Stephani 1894b). Type: Brazil.

=*Frullania involuta* Hampe ex Steph., *Spec. Hepat.* 4: 595, 1911 (Stephani 1911b), syn fide Uribe and Gradstein (2003). Type: Lesser Antilles. .

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Camp 2, 16°23′17″N, 89°05′30″W, 14 Feb 1997, *Allen 18718*, det. Whittemore (MO-5224004!, **this publication**); Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18819*, det. Atwood and Dauphin Jun 2017 (MO-5224012! https://tropicos.org/specimen/90094397, **this publication**); Columbia River Forest Reserve, Union Camp, 16°23′54″N, 89°08′29″W, 600–700 m, 10 Feb 1997, *Allen 18503*, det. Atwood 2017 (MO-5224005! https://tropicos.org/specimen/90094392, **this publication**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34455*, *34472* (JE, MO-6690412, **Schäfer-Verwimp 2014** as *Frullania involuta*). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30776* (JE, **Schäfer-Verwimp 2014** as *Frullania involuta*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania wagneri Steph., *Sp. Hepat. (Stephani)* 4: 392, 1910 (Stephani 1910a). Lectotype (Bonner 1965: 466): Panama, Maume & Gorgone, s.d., *M. Wagner s.n.*, ex hb. M (G-00066773 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119839&lang=en, isolectotype M).

Note: The type locality of *Frullania wagneri* has not been identified, and the spelling of the place name is not necessarily correct.

PANAMA. Moume & Gorgone(?), *Wagner s.n.* (G-00066773 ex M, **TYPE, Stephani 1910a; Bonner 1965**).

Also reported from the Caribbean.

Frullania winteri Steph., *Sp. Hepat. (Stephani)* 4: 338, 1910 (Stephani 1910a) var. ***vanderhammenii*** (Haarbrink) Yuzawa, *J. Hattori Bot. Lab.* 70: 233, 1991 (Yuzawa 1991).

≡*Frullania vanderhammenii* Haarbrink, *Lindbergia* 7(1): 56, 1981 (Haarbrink 1981). Type: Colombia.

***GUATEMALA.** *HUEHUETENANGO: San Mateo Ixtatán municipio, N of San Mateo Ixtatán, 15°51′45.1″N, 91°30′52.1″W, 2,800 m, 11 Apr 2007, *Laeger et al. 3702*, det. Atwood and Dauphin (MO-6160446! https://tropicos.org/specimen/101182541, **this publication**).

Also reported from Mexico, Western South America.

***Frullanoides* Raddi, *Critt. Brasil.*: 13, 1822 (Raddi 1822).**

Frullanoides chinantlana (Gottsche) L. Söderstr. et A.Hagborg, *Lindbergia* 46(e24519): 1, 2023 (Söderström and Hagborg 2023a).

≡*Phragmicoma bicolor γ chinantlana* Gottsche, *Mexik. Leverm.*: 172, 1863 (Gottsche 1863). Type: Mexico.

≡*Brachiolejeunea tristis* Steph., *Sp. Hepat. (Stephani)* 5: 112, 1912 (Stephani 1912a). Type: Ethiopia.

=*Frullanoides tristis* (Steph.) van Slageren, *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 544: 110, 1985 (van Slageren 1985b).

=*Brachiolejeunea insularis* A.Evans, *Bull. Torrey Bot. Club* 35(4): 159, 1908 (Evans 1908c), syn. fide van Slageren (1985b). Type: Puerto Rico.

=*Brachiolejeunea parva* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 125, 1951 (Herzog 1951), syn. fide van Slageren (1985b). Lectotype (van Slageren 1985b: 111 as "holotype") if not holotype: Honduras, Lancetilla Valley, near Tela, Standley 56075a (JE-04002172 https://je.jacq.org/JE04002172).

BELIZE. TOLEDO: Lime Cay, 6 Jul 1972, *Spellman & Stoddard B128b*, det. Gradstein 1976 (MO-2624652, HAC, EGR, **Reyes 1979** as *Brachiolejeunea insularis*).

HONDURAS. S. loc. (Fulford and Sharp 1990 as *Frullanoides tristis*; **Gradstein 1994** as *Frullanoides tristis*; Bastos 2004 as *Frullanoides tristis*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56075a* (JE, **Herzog 1951** as *Brachiolejeunea parva*; **Bonner 1963a** as *Brachiolejeunea parva*; **van Slageren 1985b** as *Frullanoides tristis*).

COSTA RICA. S. loc. (Fulford and Sharp 1990 as *Frullanoides tristis*; Bastos 2004 as *Frullanoides tristis*). CARTAGO: Turrialba, *Svihla 47-749* (WTU, **van Slageren 1985b** as *Frullanoides tristis*; **Morales 1991** as *Frullanoides tristis*; **Gradstein 1994** as *Frullanoides tristis*; **Dauphin 2005** as *Frullanoides tristis*); Turrialba, 1947, *Svihla 47-778* (WTU, **van Slageren 1985b** as *Frullanoides tristis*; **Morales 1991** as *Frullanoides tristis*; **Gradstein 1994** as *Frullanoides tristis*; **Dauphin 2005** as *Frullanoides tristis*).

PANAMA. S. loc. (Fulford and Sharp 1990 as *Frullanoides tristis*; Bastos 2004 as *Frullanoides tristis*). CHIRIQUÍ: S. loc., *Hélion 497* (G-20160, **van Slageren 1985b** as *Frullanoides tristis*; **Gradstein 1994** as *Frullanoides tristis*; **Stotler et al. 1998** as *Frullanoides tristis*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Indian Subcontinent, Indo-China, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullanoides corticalis (Lehm. et Lindenb.) van Slageren, *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 544: 84, 1985 (van Slageren 1985b).

≡*Jungermannia corticalis* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 50, 1832 (Lehmann 1832). Type: Jamaica.

≡*Brachiolejeunea corticalis* (Lehm. et Lindenb.) Steph., *Hedwigia* 33: 180, 1890 (Stephani 1890b), nom. inval. (ICN2018 Art. 35.1; genus not valid). Name validated in Schiffner (1894).

=*Ptychocoleus torulosus* f. *parvistipulus* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 135, 1951 (Herzog 1951). Lectotype (van Slageren 1985b: 85 as "holotype") or possibly holotype: Honduras, Lancetilla Valley, near Tela, 20–600 m, 14 Dec 1927–15 Mar 1928, *Standley 54496* (JE-04010829 https://je.jacq.org/JE04010829).

BELIZE. S. loc. (Fulford and Sharp 1990; Bastos 2004). *BELIZE: Tropical Education Center Mile 28–29 on Western Highway, 17°21′N, 88°32′W, 5 Dec 1996, *Allen 17998*, det. Whittemore 1996 (MO-4417024!, **this publication**). TOLEDO: Acahual near Columbia, 7 Feb 1948, *Gentle 6392*, det. Atwood 2013 (MO-5281060!, **this publication**); Franks Cay, 6 Jul 1972, *Spellman & Stoddard B129b*, det. Gradstein 1976 (MO-2624650, EGR, HAC, U, **van Slageren 1985b**; **Gradstein 1994**; **Whittemore and Allen 1996**); Lime Cay, 6 Jul 1972, *Spellman & Stoddard B128b*, det. Gradstein 1976 (MO-2624652, HAC, EGR, **van Slageren 1985b**; **Gradstein 1994**; **Whittemore and Allen 1996**); Nicolas Cay, 6 Jul 1972, *Spellman & Stoddard B127b*, det. Gradstein 1976 (MO-2624651, EGR, HAC, U, **van Slageren 1985b**; **Gradstein 1994**; **Whittemore and Allen 1996**); S. loc. (Whittemore and Allen 1996).

HONDURAS. S. loc. (Fulford and Sharp 1990; Bastos 2004). ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, in vicinity of UNAH-CURLA camp, 15°42′N, 86°51′W, 27 Apr 1996, *Allen 17631*, det. Dauphin May 2017 (MO-6230314!, **this publication**); Tela municipio, Lancetilla Valley, 20–600 m, 14 Dec 1927, *Standley 54496* (JE, **TYPE** of *Ptychocoleus torulosus* f. *parvistipulus*, **Herzog 1951** as *Ptychocoleus torulosus* f. *parvistipulus*; **van Slageren 1985b**; **Geissler and Bischler 1989** as *Ptychocoleus torulosus* f. *parvistipulus*; **Gradstein 1994**).

NICARAGUA. S. loc. (Bastos 2004). ATLÁNTICO NORTE: Bilwi municipio, Puerto Cabezas, *Seymour* (MO, U, **Gradstein 1994**); Bilwi municipio, vicinity of Auastara, 14°19′N, 83°12–13′W, 29 Sep–2 Oct 1978, *Stevens 10530*, det. Atwood 2013 (MO-6236100!, **this publication**). CHONTALES: Villa Sandino municipio, La Gateada near Highway 7, *Stevens & Krukoff 2862d* (MO, U, **Gradstein 1994**).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Bastos 2004). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3338* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); La Cruz cantón, Guanacaste National Park, Playa Gringos, Quebrada Despeñadero, 0–50, 27 Aug 2003, *Dauphin et al. 3292* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). LIMÓN: Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11193a* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Talamanca cantón, Cahuita, *Holz CR 99-608* (**Dauphin 2005**). PUNTARENAS: Golfo Dulce, 26 Mar 1939, *Taylor 39-754* (AHFH, MICH, hb. Fulford, **Steere 1946** as *Brachiolejeunea corticalis*; **van Slageren 1985b**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**).

PANAMA. Canal Zone (Stotler et al. 1998; Schäfer-Verwimp 2014); Canal Zone, 29 Dec 1909, *Howe* (NY, YU, **Schuster 1980d** as *Brachiolejeunea corticalis*; **van Slageren 1985b**); Gatún, 1 Jan 1910, *Howe* (NY, YU, **Schuster 1980d** as *Brachiolejeunea corticalis*; **van Slageren 1985b**); S. loc. (Fulford and Sharp 1990; Bastos 2004). BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Caswell-Levy 1051*, det. Caswell-Levy Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, Aug 2017, *Dauphin et al. 4613* (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Punta Donato (9°22′45.5″N, 82°22′07.8″W; **Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Brachiolejeunea corticalis*; **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 31034* (JE, **Schäfer-Verwimp 2014**). COLÓN: Colón distrito, Lake Gatún, *Howe* (NY, U, **Gradstein 1994**; **Stotler et al. 1998**); Colón distrito, Lake Gatún, 1 Jan 1910, *Howe*, det. Evans (MO-5379446!, **this publication**); Portobelo distrito, Playa Langosta, *Salazar Allen 870* (hb. Fulford, PMA, **van Slageren 1985b**; **Stotler et al. 1998**). ?PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Panama Province. VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34283* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34326 p.p.* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullanoides densifolia Raddi, *Critt. Brasil.*: 14, 1822 (Raddi 1822) subsp. ***densifolia***. Type: Brazil.

≡*Brachiolejeunea densifolia* (Raddi) A.Evans, *Bull. Torrey Bot. Club* 35(4): 158, 1908 (Evans 1908c).

=*Jungermannia bicolor* Nees, *Fl. Brasil (Martius)* 1(1): 349, 1833 (Nees 1833b). Type: Brazil.

≡*Lejeunea bicolor* (Nees) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 59, 1836 (Nees and Montagne 1836).

=*Marchesinia coniloba* Steph., *Sp. Hepat. (Stephani)* 5: 147, 1912 (Stephani 1912a), syn. fide van Slageren (1985b). Lectotype (van Slageren 1985b: 92 as "holotype") or possibly holotype: Costa Rica, Cartago, 1,500 m, May 1900, *Wercklé s.n.* (G-00047462 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131671&lang=en).

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 242* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**); S. loc. (**Stephani 1912a** as *Marchesinia coniloba*; **Geissler and Bischler 1985** as *Marchesinia coniloba*; Fulford and Sharp 1990; Bastos 2004; Gradstein and Holz 2005); S. loc.,

Gradstein 10171 (GOET, **Larraín et al. 2015**). CARTAGO: S. loc., *Wercklé* (G-00047462 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131671&lang=en, **TYPE** of *Marchesinia coniloba*, **van Slageren 1985b**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, Santa María, *Standley & Valerio 43152* (JE, **Kappelle 1996**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43152*, *43158* (**Herzog 1951** as *Brachiolejeunea densifolia*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Fulford and Sharp 1990; Bastos 2004). PANAMA WEST: Capira distrito, Cruces (**Mitten 1854b** as *Lejeunea bicolor*).

Also reported from Northeastern Pacific(?), Southeastern USA(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullanoides liebmaniana (Lindenb. et Gottsche) van Slageren, *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 544: 102, 1985 (van Slageren 1985b).

≡*Phragmicoma liebmaniana* Lindenb. et Gottsche, *Syn. Hepat.* 5: 744, 1847 (Gottsche et al. 1847). Type: Mexico.

?HONDURAS. S. loc. (Bapna and Kachroo 2000b). Note: We are not aware of any firsthand report from Honduras.

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, Cerro Waylawás (Peñas Blancas), 13°29′00″N, 84°45′30″W, 100–268 m, 4 May 1978, *Stevens 8789*, det. Whittemore 1999 (MO-3669081! http://tropicos.org/Specimen/100948091, **this publication**).

COSTA RICA. S. loc. (Bapna and Kachroo 2000b). GUANACASTE: Liberia cantón, Rincón de la Vieja National Park, Santa María, 10°45′55″N, 85°18′15″W, 700–800 m, *Dauphin 2354*, det. Holz (CR, **Dauphin 2005**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, 700–2,500 m, *Dauphin 3402* (CR, **Dauphin 2005**).

PANAMA. S. loc. (Bapna and Kachroo 2000b). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4608*, det. Dauphin Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, between Pirre 1 and Pirre 2, *Salazar Allen & Gradstein 9198* (PMA, **Stotler et al. 1998**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Pirre Massif, 30 Apr 1990, *Allen 8707*, det. Whittemore 1992 (MO-3677055, **Stotler et al. 1998**); trail El Real–Pirre, *Salazar Allen & Gradstein 9199* (PMA, **Gradstein 1994**; **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3141* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Frullanoides mexicana van Slageren, *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 544: 106, 1985 (van Slageren 1985b). Type: Mexico.

=*Brachiolejeunea mamillata* f. *typica* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 135, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, *Standley 55249* (JE-04010819 https://je.jacq.org/JE04010819).

=*Brachiolejeunea mamillata* f. *obtusifolia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 135, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, *Standley 54526* (JE-04010822 https://je.jacq.org/JE04010822).

=*Brachiolejeunea mamillata* f. *brevifolia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 135, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Lancetilla Valley, near Tela, 20–600 m, *Standley 54372*, *55428* (JE-04010821 https://je.jacq.org/JE04010821) and *55428* (JE-04010820 https://je.jacq.org/JE04010820).

HONDURAS. S. loc. (Gradstein 1987; Fulford and Sharp 1990). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 54358* (JE, **van Slageren 1985b**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54372* (JE, **Herzog 1951** as *Brachiolejeunea mamillata* f. *brevifolia*; **Gradstein 1994**); Tela municipio, Lancetilla Valley, *Standley 54423* (JE, **van Slageren 1985b**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55428* (**Herzog 1951** as *Brachiolejeunea mamillata* f. *brevifolia*; **van Slageren 1985b**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54526*, *55249* (**Herzog 1951** as *Brachiolejeunea mamillata* f. *typica*; **van Slageren 1985b**); Tela municipio, Lancetilla Valley, *Standley 55295*, *56075a* (JE, **van Slageren 1985b**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, 14 Dec 1927, *Standley 54496* (JE, **van Slageren 1985b**; **Gradstein 1994**).

COSTA RICA. LIMÓN: Talamanca cantón, Cahuita, 0 m, *Maas 7934* (CR, U, MO, **Gradstein 1994**; **Gradstein et al. 1994**; **Dauphin 2005**); Talamanca cantón, road along the Caribbean coast from Limón to Cahuita, 0 m, *Sipman 12298a* (U, **Gradstein 1994**; **Gradstein et al. 1994**; **Dauphin 2005**).

***PANAMA.** *BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Magaña-Marcial 246*, det. Magaña-Marcial Aug 2017 (PMA, Salazar Allen et al. 2022).

Also reported from Mexico.

***Fulfordianthus* Gradst., *Bryologist* 95(1): 44, 1992 (Gradstein 1992b).**

Fulfordianthus evansii (Fulford) Gradst., *Bryologist* 95(1): 46, 1992 (Gradstein 1992b).

≡*Thysananthus evansii* Fulford, *Bull. Torrey Bot. Club* 68(1): 34, 1941 (Fulford 1941a). Holotype: Belize, Punta Gorda, Oct 1932, s. coll. (MO-2248310 https://tropicos.org/specimen/100263202).

GUATEMALA. S. loc. (Whittemore and Allen 1996). IZABAL: East coast, *Watson 116 p.p.* (NY, **Gradstein 1994**; **Pérez 2009**).

BELIZE. S. loc. (Gradstein 1987 as *Thysananthus evansii*; **Gradstein 1992b**; Whittemore and Allen 1996). TOLEDO: Condemn Branch Pine Ridge, 13 Mar 1945, *Gentle 5269* (MO-3951383, **Whittemore and Allen 1996** as *Thysananthus evansii*); Punta Gorda (CINC, M, **Fulford 1941a** as *Thysananthus evansii*; **Geissler and Bischler 1990** as *Thysananthus evansii* ["Honduras"]; **Sukkharak 2015**); S. loc. (**Gradstein 1994**; Whittemore and Allen 1996).

COSTA RICA. S. loc. (Gradstein 1992a as *Thysananthus evansii*; Whittemore and Allen 1996); S. loc., *Dauphin* (GOET, **Wang et al. 2016**; **Zhu et al. 2017, 2018b**). GUANACASTE: Liberia cantón, Rincón de la Vieja National Park, Sector Santa María, Quebrada Provisión, *Dauphin 2299* (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, *Egremy 343*, det. Dauphin (CR, **Dauphin 2005**); Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, *Egremy 364*, det. Dauphin (CR, **Dauphin 2005**); Pococí cantón, Cerro Tortuguero, *Dauphin* (GOET, **Dauphin 2005**; **Hartmann et al. 2006**; **Wilson et al. 2007**; **Heinrichs et al. 2012c, 2014a, 2014b**; **Czumay et al. 2013**; **Dong et al. 2013**; **Feldberg et al. 2014**; **Schäfer-Verwimp et al. 2014**; **Wang et al. 2014**; **Shi et al. 2015**; **Bechteler et al. 2016a, 2016c**; **Zhu and Shu 2018**); Pococí cantón, Tortuguero, 1–5 m (Gradstein 1992b); Pococí cantón, Tortuguero, *Eggers CR12/1* (JE, U, **Gradstein 1994**); Pococí cantón, Tortuguero, *Steere CR-31* (NY, U, **Thiers 1985** as *Thysananthus evansii*, **Gradstein 1994**); Pococí cantón, Tortuguero, 10°31′N, 83°32′W, *Steere* (FLAS, **Morales 1991** as *Thysananthus evansii*; **Dauphin 2005**).

PANAMA. S. loc. (Whittemore and Allen 1996; Stotler et al. 1998). DARIÉN: Cerro Pirre, Rancho Mojado, 400–500 m, *Salazar Allen & Gradstein 9242*, *9243*, *9265* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15094* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek, *Salazar Allen 4300* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**).

Also reported from Western South America(?).

Fulfordianthus pterobryoides (Spruce) Gradst., *Bryologist* 95(1): 44, 1992 (Gradstein 1992b).

≡*Lejeunea pterobryoides* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 109, 1884 (Spruce 1884). Type: Ecuador.

≡*Thysananthus pterobryoides* (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 130, 1893 (Schiffner 1893a).

≡*Thysanolejeunea pterobryoides* (Spruce) Steph., *Sp. Hepat. (Stephani)* 4: 786, 1912 (Stephani 1912b).

COSTA RICA. S. loc. (Stephani 1912b as *Thysananthus pterobryoides*; Timme 1985 as *Thysananthus pterobryoides*; Gradstein 1992b, 2021; Gradstein et al. 2001b; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014); S. loc., *Chavarría 1413* (CR, **Hartmann et al. 2006**; **Wilson et al. 2007**); S. loc., *Dauphin 2158* (GOET, **Ye and Wei 2021**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Volcán Orosí, Sendero Casafrán, *Dauphin 2518* (GOET, CR, **Hartmann et al. 2006**; **Wang et al. 2014, 2016**; **Larraín et al. 2015**; **Shi et al. 2015**; **Ye and Zhu 2018**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0284*, det. Schäfer-Verwimp (MO-6093842! https://tropicos.org/specimen/100650996, **this publication**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-196* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Osa cantón, Península de Osa, Rincón, Station Boscosa, 18 May 1993, *Dauphin* (hb. Lücking ex USJ-47009, **Lücking 1995**). SAN JOSÉ: Candelaria, *Stephani 1038* (**Morales 1991** as *Thysananthus pterobryoides*); Candelaria, 1,800 m, 24 Dec 1881, *Lehmann 1038* (BM, G, PC, US, **Stephani 1894a** as *Thysanolejeunea pterobryoides*; **Bischler 1965** as *Thysananthus pterobryoides*; **Gradstein 1994**; **Dauphin 2005**); S. loc. (Fulford 1941a as *Thysananthus pterobryoides*).

PANAMA. S. loc. (Gradstein 1992b; Lücking 1995; Stotler et al. 1998). CHIRIQUÍ: Boquete distrito, Dexter trail, 4 Nov 1918, *Cornman 3117A*, det. Atwood (MO-5280918!, **this publication**); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle & Aranda 1.39* (NY, PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Gualaca distrito, Fortuna, *Spörle 1.39* (PMA, **Spörle 1990** as *Thysananthus pterobryoides*); S. loc. (Schäfer-Verwimp 2014). COCLÉ: La Pintada distrito, El Copé, *Salazar Allen et al. 1491*, *1503* (NY, PMA, **Gradstein 1994**; **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). *COLÓN: Colón distrito, Santa Rita Ridge, ~12 km from Trans Isthmian Highway, 28 Jun 1978, *Hammel 3633*, det. Atwood 2016 (MO-5228156!, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, *Salazar Allen & Gradstein several coll. no.* (PMA, U, **Gradstein 1994**); Cerro Pirre, *Salazar Allen & Gradstein* (PMA, U, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA: Chepo distrito, Cañazas Mountains, above Tortí Arriba, *Folsom et al. 6705* (MO, U, **Gradstein 1994**; **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Salazar Allen & Chung 5226* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 21 Jul 1972, *Gentry & Dwyer 5597*, det. Whittemore 1989 (MO-3668784!, **Stotler et al. 1998**); S. loc. (Schäfer-Verwimp 2014). VERAGUAS: Montijo distrito, Island of Coiba, *Seemann* (NY, Y, **Fulford 1941a** as *Thysananthus pterobryoides*; **Gradstein 1994**; Salazar Allen and Chung 1997a; **Stotler et al. 1998**); Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34307* (JE, **Schäfer-Verwimp 2014**).

Also reported from Western South America.

Fuscocephaloziopsis Fulford, *Mem. New York Bot. Gard.* 11(3): 353, 1968 (Fulford 1968).

Fuscocephaloziopsis catenulata (Huebener) Váňa et L.Söderstr., *Phytotaxa* 112(1): 9, 2013 (Váňa et al. 2013b).

≡*Jungermannia catenulata* Huebener, *Hepaticol. germ.*: 169, 1834 (Hübener 1834). Type: Germany.

≡*Cephalozia catenulata* (Huebener) Lindb., *Acta Soc. Sci. Fenn.* 10: 262, 1872 (Lindberg 1872).

GUATEMALA. S. loc. (Gradstein et al. 2001b as *Cephalozia catenulata*). EL PROGRESO: Finca Piamonte, *Steyermark 43434 p.p.* (F, **Gradstein and** Váňa **1994** as *Cephalozia catenulata*). QUETZALTENANGO: Above Chiquival, *Sharp 2121* (TENN, **Gradstein and** Váňa **1994** as *Cephalozia catenulata*). TOTONICAPÁN: E of Totonicapán, *Sharp 2606* (TENN, **Gradstein and** Váňa **1994** as *Cephalozia catenulata*).

HONDURAS. FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, *Standley 11896 p.p.* (F, **Gradstein and** Váňa **1994** as *Cephalozia catenulata*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Cephalozia catenulata*; Schäfer-Verwimp and Van Melick 2016). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Cephalozia catenulata*); Dota cantón, San Gerardo, Río Savegre Valley, 1,950 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0073* (CR, PRC, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Cephalozia catenulata*; **Dauphin 2005** as *Cephalozia catenulata*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Middle Asia(?), Caucasus, Western Asia, China, Eastern Asia, Indo-China, Malesia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean.

Fuscocephaloziopsis crassifolia (Lindenb. et Gottsche) Váňa et L.Söderstr., *Phytotaxa* 112(1): 10, 2013 (Váňa et al. 2013b).

≡*Jungermannia crassifolia* Lindenb. et Gottsche, *Syn. Hepat.* 5: 685, 1847 (Gottsche et al. 1847). Type: Mexico.

≡*Cephalozia crassifolia* (Lindenb. et Gottsche) Fulford, *Mem. New York Bot. Gard.* 11: 312, 1968 (Fulford 1968).

=*Cephalozia subforficata* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 17, 1938 (Herzog 1938), syn. fide Váňa (1988). Lectotype (Váňa 1988: 196 as "holotype"): Costa Rica, San José, Laguna de La Chonta, 18 Dec 1925, *Standley 42299* (JE-04001123 https://je.jacq.org/JE04001123, isolectotypes B-18207!, US-00289479 http://n2t.net/ark:/65665/378eaac82-cd5e-4375-9f81-ba6fdec193a2).

=*Cephalozia caribbeania* Fulford, *Mem. New York Bot. Gard.* 11: 315, 1968 (Fulford 1968), syn. fide Váňa (1988). Type: Cuba.

GUATEMALA. S. loc. (Fulford et al. 1970 as *Cephalozia caribbeania*; Bonner 1977 as *Cephalozia caribbeania*; Fulford 1987 as *Cephalozia caribbeania*; Fulford and Sharp 1990 as *Cephalozia caribbeania*; Freire et al. 2012 as *Cephalozia crassifolia*). ALTA VERAPAZ: Cobán municipio, Cubilguitz, 350 m, *Türckheim* (NY, **Fulford 1968** as *Cephalozia subforficata*; **Freire 2006** as *Cephalozia subforficata*); Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004** as *Cephalozia crassifolia*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Cephalozia crassifolia*); S. loc., *Pérez 1401* (USCG, Pérez 2009 as *Cephalozia crassifolia*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Cephalozia crassifolia*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 209*, *224*, *266*, *42*, *63*, *77* (USCG, **Freire et al. 2013** as *Cephalozia crassifolia*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Cephalozia crassifolia*). CHIQUIMULA: S. loc., *Steyermark 21037* (F, **Fulford 1968** as *Cephalozia subforficata*; **Freire 2006** as *Cephalozia subforficata*; **Pérez 2009** as *Cephalozia crassifolia*). EL PROGRESO: Finca Bucaral, 6,500 ft (1,981 m), *Sharp 2767* (TENN, **Fulford 1968** as *Cephalozia caribbeania*; **Freire 2006** as *Cephalozia caribbeania*); San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Cephalozia crassifolia*); Volcán Santa Luisa, 2,400–3,333 m, *Steyermark 43525 p.p.*, *43527 p.p.* (F, **Fulford 1968** as *Cephalozia subforficata*; **Freire 2006** as *Cephalozia subforficata*; **Pérez 2009** as *Cephalozia crassifolia*). HUEHUETENANGO: S. loc., *Pérez 1399* (USCG, Pérez 2009 as *Cephalozia crassifolia*). QUETZALTENANGO: San Carlos Sija municipio, Cerro de Sija, 10,000 ft (3,048 m), *Sharp 5049 p.p.* (TENN, **Fulford 1968** as *Cephalozia subforficata*; **Freire 2006** as *Cephalozia subforficata*); San Carlos Sija municipio, Cerro de Sija, *Sharp 5049* (TENN, Pérez 2009 as *Cephalozia crassifolia*); Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 13 Jan 2006, *Quedensley 3956*, det. Dauphin Sep 2017 (MO, W!, **this publication**); Zunil, Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 1 Jan 2004, *Quedensley 2137c*, det. Dauphin Sep 2017 (MO, W!, **this publication**). QUICHÉ: S. loc., *Pérez 2319* (USCG, Pérez 2009 as *Cephalozia crassifolia*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Cephalozia crassifolia*); Sierra de Las Minas, 2,500 m, *Steyermark 29967* (F, **Fulford 1968** as *Cephalozia caribbeania*; **Freire 2006** as *Cephalozia caribbeania*; **Pérez 2009** as *Cephalozia caribbeania*).

BELIZE. CAYO: Southern Maya Mountains, Doyle's Delight, 16°29′N, 89°02′W, 5 Dec 1993, *Allen 15084*, det. Whittemore 1994 (BRH, MO-3981790, **Whittemore and Allen 1996** as *Cephalozia crassifolia*); Southern Maya Mountains, Doyle's Delight, 16°29′N, 89°02′W, 5 Dec 1993, *Allen 15106*, det. Whittemore 1994 (BRH, MO-3981754, **Whittemore and Allen 1996** as *Cephalozia crassifolia*); Southern Maya Mountains, Doyle's Delight, 16°29′N, 89°02′W, 5 Dec 1993, *Allen 15267*, det. Whittemore 1974 (BRH, MO-3981778, **Whittemore and Allen 1996** as *Cephalozia crassifolia*); Southern Maya Mountains,

Doyle's Delight, 16°29′N, 89°02′W, 5 Dec 1993, *Allen 15270*, det. Whittemore 1974 (BRH, MO-3981780, **Whittemore and Allen 1996** as *Cephalozia crassifolia*); Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,140 m, 10 Dec 1993, *Allen 15372*, det. Whittemore 1974 (BRH, MO-3981779, **Whittemore and Allen 1996** as *Cephalozia crassifolia*); Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,140 m, 10 Dec 1993, *Allen 15373*, det. Whittemore 1974 (BRH, MO-3981755, **Whittemore and Allen 1996** as *Cephalozia crassifolia*). *TOLEDO: Columbia River Forest Reserve, along trail from Camp 2 to Chiclero Camp, 16°23′17″N, 89°04′36″W, 15 Feb 1997, *Allen 18789*, det. Whittemore 2000 (MO-5215177!, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 19 Feb 1997, *Allen 18915*, det. Whittemore 2000 (MO-5215179!, **this publication**); Columbia River Forest Reserve, Little Quartz Ridge, 16°23′58″N, 89°06′41″W, 21 Feb 1997, *Allen 19016*, det. Whittemore 2000 (MO-5215158!, **this publication**); Columbia River Forest Reserve, Union Camp, 16°23′54″N, 89°08′29″W, 600–700 m, 10 Feb 1997, *Allen 18540*, det. Whittemore 2000 (MO-5215168!, **this publication**).

HONDURAS. S. loc. (Fulford et al. 1970 as *Cephalozia caribbeania*; Bonner 1977 as *Cephalozia caribbeania*; Fulford 1987 as *Cephalozia caribbeania*; Fulford and Sharp 1990 as *Cephalozia caribbeania*). *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 20 Apr 1996, *Allen 17433*, det. Whittemore 1996 (MO-4428680!, **this publication**). *COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 14°48′N, 88°52′W, 12 Mar 1993, *Allen 13908*, det. Whittemore 1996 (MO-4428665!, **this publication**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 20 Mar 1993, *Allen 14278*, det. Whittemore 1996 (MO-4428663!, **this publication**); San Pedro Sula municipio, E Slope of Peña Blanca, 22 Mar 1951, *Morton 7322*, det. Robinson (MO-6695841!, **this publication**). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, Caño Lamor, *Carlson 2489* (F, **Fulford 1968** as *Cephalozia caribbeania*); San Antonio de Oriente municipio, Cerro de Uyuca, near summit, 1,600 m, *Standley 759 p.p.*, *4810* (F, **Fulford 1968** as *Cephalozia caribbeania*). *OLANCHO: Catacamas municipio, Sierra de Algalta, Montana Babilonia, 15 km NNW of Catacamas, 14°59′N, 85°56′W, 31 May 1992, *Allen 12650*, det. Dauphin May 2017 (MO-5227669!, **this publication**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 2,100–2,400 m, 31 Jul 1977, *Croat 42457 p.p.*, det. Dauphin May 2017 (MO-6699947! https://tropicos.org/specimen/100988152, **this publication**); Metapán municipio, Cerro Montecristo, ~1.4 mi NE of Metapán, along trail to Punto Trifinio, 1,000–1,350 m, 24 Feb 1978, *Stevens 6545*, det. Whittemore 1990 (MO-3678530!, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Cephalozia crassifolia*; **Holz and Gradstein 2005b** as *Cephalozia crassifolia*); S. loc. (Cole 1982, 1983, both as *Cephalozia caribbeania* and *Cephalozia subforficata*; Schuster 2002 as *Cephalozia subforficata*). *ALAJUELA: San Ramón cantón, Monteverde, Atlantic Slope, Cerro Amigos, 10°19′N, 84°47′W, 20 Mar 1992, *Lyon 396*, det. Whittemore 1995 (MO-4438244!, **this publication**). HEREDIA: Las Vueltas area, valley of Rio Patria, vicinity where road 113 crosses the river, 10°06′N, 84°03′W, 29 Mar 1973, *Crosby & Crosby 6427*, det. Váňa (MO-3677757!, **this publication**); Sarapiquí cantón, El Plástico, *Dauphin 2153* (CR, **Dauphin 2005** as *Cephalozia crassifolia*). PUNTARENAS: Coto Brus cantón, Fila Cruces, *Dauphin 2153* (CR, **Dauphin 2005** as *Cephalozia crassifolia*); Monteverde, <1,500 m (Morales 1991 as *Cephalozia crassifolia*; Dauphin 2005 as *Cephalozia crassifolia*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 24 Mar 1992, *Lyon 465*, det. Whittemore 1995 (MO-4438245!, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Cephalozia crassifolia*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Cephalozia crassifolia*); Monteverde, *James, W. 23773* (**Dauphin 2005** as *Cephalozia crassifolia*); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-02* (US, MO-6168186, **Reed and Robinson 1971** as *Cephalozia caribbeania*); S. loc. (**Merwin et al. 2001** as *Cephalozia crassifolia*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Cephalozia crassifolia*); Dota cantón, Laguna de La Chonta, 2,000–2,100 m, *Standley 42299* (JE-04001123 https://je.jacq.org/JE04001123, B-18207, **TYPE** of *Cephalozia subforficata*, **Herzog 1938** as *Cephalozia subforficata*; **Bonner 1963a** as *Cephalozia subforficata*; **Fulford 1968** as *Cephalozia subforficata*; Váňa **1988** as *Cephalozia crassifolia*; **Morales 1991** as *Cephalozia crassifolia*; **Kappelle 1996** as *Cephalozia crassifolia*; **Dauphin 2005** as *Cephalozia crassifolia*); Dota cantón, Laguna de La Chonta, *Standley 42711* (Hb. Grolle, **Fulford 1968** as *Cephalozia subforficata*; **Morales 1991** as *Cephalozia crassifolia*; **Dauphin 2005** as *Cephalozia crassifolia*); Dota cantón, San Gerardo (Dauphin 2005 as *Cephalozia crassifolia*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Gradstein 9775* (GOET, **Stotler et al. 1998** as *Cephalozia crassifolia*); S. loc. (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34224* (JE, **Schäfer-Verwimp 2014**); S. loc., *Schäfer-Verwimp & Verwimp 34224* (M, **Feldberg et al. 2016, 2017**). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Cephalozia crassifolia*); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9275*, *9276* (PMA, **Stotler et al. 1998** as *Cephalozia crassifolia*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein*

& Salazar Allen (PMA, U, **Gradstein and Salazar Allen 1992** as *Cephalozia crassifolia*); S. loc. (Schäfer-Verwimp 2014); Summit of Pirre Massif, 1,200–1,350 m, *Allen 8886*, det. Whittemore 1990 (MO-3677663, **Stotler et al. 1998** as *Cephalozia crassifolia*).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 965 p.p.*, det. G. Dauphin Mar 2021 (USJ-109015!, CR!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 965* (USJ, **Dauphin 1995**, **1999**, **2005**, all as *Cephalozia crassifolia*); Valle Wafer, 5°32′57″N, 87°03′56″W, 0–10 m, 19 Feb 1990, *Dauphin 1159*, det. G. Dauphin Apr 2021 (USJ-109005!, **this publication**); Valle Wafer, 5°32′57″N, 87°03′56″W, 5 m, 15 Feb 1994, *Dauphin 1159* (USJ, **Dauphin 1995**, **1999**, **2005**, all as *Cephalozia crassifolia*).

Also reported from Northern Europe, Southwestern Europe, Macaronesia, Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Fuscocephaloziopsis lunulifolia (Dumort.) Váňa et L.Söderstr., *Phytotaxa* 112(1): 10, 2013 (Váňa et al. 2013b).

≡*Jungermannia lunulifolia* Dumort., *Syll. Jungerm. Europ.*: 61, 1831 (Dumortier 1831). Type: Europe.

GUATEMALA. TOTONICAPÁN: East of Totonicapán, *Sharp 2606 p.p.* (TENN, Gradstein and Váňa 1994).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, the Caribbean.

***Gongylanthus* Nees, *Naturgesch. Eur. Leberm.* 2: 405, 1836 (Nees 1836).**

Gongylanthus liebmanianus (Lindenb. et Gottsche) Steph., *Bull. Herb. Boissier*, sér. 2, 6(5): 388(44), 1906 (Stephani 1906b).

≡*Gymnanthe liebmaniana* Lindenb. et Gottsche, *Syn. Hepat.* 5: 712, 1847 (Gottsche et al. 1847). Type: Mexico.

≡*Lindigina liebmanniana* (Lindenb. et Gottsche) Mitt., *J. Linn. Soc., Bot.* 16(91): 190, 1977 (Mitten 1877a).

GUATEMALA. HUEHUETENANGO: S. loc., *Pérez 1205* (USCG, Pérez 2009).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); S. loc., *Standley* (JE, G, **Grolle 1962b** as *Lindigina liebmaniana*). ALAJUELA: Poás Volcano, 31 Jul 1977, *Griffin & Araya 73*, *75*, *84* (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); S. loc. (Váňa et al. 2012a). *CARTAGO: Oreamuno cantón, Irazú Volcán National Park, 20 Mar 1954, *Daly 3a*, det. Whittemore and Juarez (MO-2103743, **this publication**); S. loc. (Váňa **et al. 2012a**). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007). Note: Three specimens in CR probably correspond to this report (San Gerardo de Dota, campo vacacional Chacón, camino hacia la Catarata,1,950–2,000 m, 25 Dec 1999, *I. Holz* & A. Schäfer-*Verwimp 6*, CR-3746974, CR-3746975; Cordillera de Talamanca, Cerro de La Muerte, área de la cima, páramo, 3,400–3,500 m, *I. Holz* & A. Schäfer-*Verwimp 176*, CR-3747205).

PANAMA. S. loc. (Gradstein 1999a). †BOCAS DEL TORO: S. loc. (Váňa et al. 2012a). Note: This must refer to the "new" comarca Naso Tjër Di. NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1566* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Gongylanthus limbatus (Herzog) Grolle et Váňa, *Folia Geobot. Phytotax.* 9(2): 198, 1974 (Váňa 1974b).

≡*Aplozia limbata* Herzog, *Beih. Bot. Centralbl.* 61B(3): 561, 1942 (Herzog 1942b). Type: Ecuador.

?COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014; Gradstein 2021; Gradstein and Pócs 2021). ?SAN JOSÉ: S. loc. (Váňa et al. 2012a). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. S. loc. (Gradstein 2021; Gradstein and Pócs 2021). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,250 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30883* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Gongylanthus muelleri (Gottsche) Steph., *Bull. Herb. Boissier*, sér. 2, 6(5): 388 (44), 1906 (Stephani 1906b).

≡*Lindigia muelleri* Gottsche, *Mexik. Leverm.*: 121, 1863 (Gottsche 1863). Type: Mexico.

?GUATEMALA. S. loc. (Schäfer-Verwimp 2014). ?QUICHÉ: S. loc. (Váňa et al. 2012a). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (León-Yánez et al. 2006; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014). SAN JOSÉ: Pérez Zeledón cantón, Rivas, San Gerardo, Río Chirripó Pacífico, 1,400–1,600 m, *Schäfer-Verwimp & Holz SV/H-0223*, *SV/H-0241* (CR, GOET, PRC, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**); S. loc. (Váňa et al. 2012a).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,480 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30895* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Western South America.

***Gymnomitrion* Corda, *Gen. Hepat.*: 651, 1829 (Corda 1829).**

Gymnomitrion africanum (Steph.) Horik., *Acta Phytotax. Geobot.* 13: 212, 1943 (Horikawa 1943).

≡*Acolea africana* Steph., *Sp. Hepat. (Stephani)* 6: 77, 1917 (Stephani 1917b). Type: Tanzania.

≡*Apomarsupella africana* (Steph. ex Bonner) R.M.Schust., *J. Hattori Bot. Lab.* 80: 91, 1996 (Schuster 1996b).

GUATEMALA. S. loc. (Váňa and Watling 2004b as *Apomarsupella africana*). SAN MARCOS: Between San Sebastian and summit of Volcán Tajumulco, 3,800–4,600 m, 3 Feb 1940, *Steyermark 35542*, det. Váňa (F, Váňa **2003** as *Apomarsupella africana*).

Also reported from West-Central Tropical Africa, East Tropical Africa, Mexico, Northern South America, Southern South America.

Gymnomitrion asperulatum R.M.Schust., *Acta Acad. Ped. Agr., Sect. Biol.* 24: 114, 2003 (Váňa 2003). Type: Venezuela.

COSTA RICA. SAN JOSÉ: Pérez Zeledón cantón, Cerro de La Muerte, Páramo Buena Vista, 3,100 m, 9 Nov 1999, *Holz 99-620*, det. Váňa (PRC, Váňa **2003**).

Also reported from Northern South America.

Gymnomitrion bolivianum (Steph.) Váňa, *Novon* 20(2): 225, 2010 (Váňa et al. 2010b).

≡*Anastrophyllum bolivianum* Steph., *Biblioth. Bot.* 87(2): 186, 1916 (Stephani 1916a). Type: Bolivia.

=*Sphenolobus laceratus* Steph., *Bull. Herb. Boissier*, sér. 2, 2(2): 173 (=*Spec. Hepat. [Stephani]* 2: 165), 1902 (Stephani 1902c), syn. fide Váňa (2003). Type: Colombia. Note: Not *Gymnomitrion laceratum* (Steph.) Horik. 1943.

≡*Marsupella lacerata* (Steph.) Váňa, *Acta Acad. Ped. Agr., Sect. Biol.*, n.s., 24: 119, 2003 (Váňa 2003).

=*Acolea andina* Herzog, *Bibl. Bot.* 88: 27, 1920 (Herzog 1920), syn. fide Váňa (2003). Type: Bolivia.

≡*Gymnomitrion andinum* (Herzog) Herzog, *Hedwigia* 74(29): 81, 1934 (Herzog 1934).

=*Marsupella trollii* Herzog, *Hedwigia* 74(2): 82, 1934 (Herzog 1934), syn. fide Váňa (2003). Type: Bolivia.

=*Marsupella subhyalina* R.M.Schust., *J. Hattori Bot. Lab.* 80: 142, 1996 (Schuster 1996b). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Gymnomitrion andinum*; **Holz and Gradstein 2005b** as *Gymnomitrion andinum*); S. loc. (Morales 1991 as *Marsupella trollii*; Gradstein 1999a as *Marsupella trollii*; Dauphin 2005 as *Marsupella trollii*; Gradstein and Holz 2005 as *Gymnomitrion andinum*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Gradstein 9747* (U, USJ, **Gradstein et al. 1994** as *Marsupella trollii*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,450 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0143* (PRC, JE, Váňa **2003** as *Marsupella lacerata*); Pérez Zeledón cantón, Valle Crestones, Chirripó, 3,775 m, 8 Mar 1983, *Chaverri et al. 1045 p.p., 1153 p.p.*, det. Gradstein (**Morales 1991** as *Marsupella trollii*; **Dauphin 2005** as *Marsupella trollii*).

Also reported from Southern Africa, Mexico, Northern South America, Western South America, Southern South America.

Gymnomitrion miniatum Lindenb. et Gottsche, *Syn. Hepat.* 4: 617, 1846 (Gottsche et al. 1846). Type: Mexico.

≡*Marsupella miniata* (Lindenb. et Gottsche) Grolle, *J. Jap. Bot.* 41(5): 144, 1966 (Grolle 1966c).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Marsupella miniata*; **Holz and Gradstein 2005b** as *Marsupella miniata*); S. loc. (Gradstein and Holz 2005 as *Marsupella miniata*). CARTAGO: Oreamuno cantón, Irazú Volcán, 3,300 m, 16 Aug 1993, *Aedo 5124*, det. Váňa (hb. Muñoz, Váňa **2003** as *Marsupella miniata*). LIMÓN: Limón cantón, NE del Cerro Chirripó, 3,775 m, *Chaverri et al. 1036*, det. Gradstein (U, USJ, Váňa **2003** as *Marsupella miniata*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,450 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0144b* (PRC, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Marsupella miniata*; Váňa **2003** as *Marsupella miniata*; **Dauphin 2005** as *Marsupella miniata*); Pérez Zeledón cantón, Valle Crestones, Chirripó, 3,775 m, 8 Mar 1983, *Chaverri et al. 1045 p.p., 1153 p.p.*, det. Gradstein (Váňa **2003** as *Marsupella miniata*).

Also reported from Malesia, Mexico, Northern South America, Western South America, Southern South America.

Gymnomitrion moralesae Váňa, *J. Hattori Bot. Lab.* 48: 230, 1980 (Váňa 1980). Holotype: Costa Rica, Alajuela, Parque Nacional Volcán Poás, 2,400–2,710 m, 30–31 Jul 1977, *D. Griffin III et A. Araya P. 88* (FLAS-B28925, isotype PRC).

≡*Marsupella moralesae* (Váňa) Váňa, *Acta Acad. Ped. Agr., Sect. Biol.*, n.s. 24: 124, 2003.

COSTA RICA. S. loc. (**Fulford and Sharp 1990**). ALAJUELA: Poás National Park (Schuster 2002); Poás Volcano, 2,400–2,710 m, 31 Jul 1977, *Griffin & Araya 88*, det. Váňa (USJ, FLAS, PRC, **TYPE**, Váňa **1980**; **Morales and Griffin 1983**; **Engel 1989**; **Morales 1991**; Váňa **2003** as *Marsupella moralesae*; **Dauphin 2005**; **Crosby and Engel 2006**).

Also reported from Mexico.

Gymnomitrion setaceum Grolle et Váňa, *J. Hattori Bot. Lab.* 41: 411, 1976 (Váňa 1976). Type: Venezuela.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a, 2021; Gradstein and Holz 2005; Gradstein and Uribe 2016). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Gradstein 9747* (U, USJ, **Gradstein et al. 1994**); Pérez Zeledón cantón, Cerro de la Muerte, Páramo Buena Vista S of Cartago, 3–5 Sep 1973, *Griffin & Eakin 590 p.p.* (FLAS, **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, 3,200–3,270 m, 3 Sep 1973, *Griffin & Eakin 598*, det. Váňa (FLAS, Váňa **2003**).

Also reported from Northern South America, Western South America.

Gymnomitrion truncatoapiculatum Herzog, *Hedwigia* 74(2): 81, 1934 (Herzog 1934). Type: Colombia.

≡*Marsupella truncatoapiculata* (Herzog) Váňa, *Acta Acad. Ped. Agr., Sect. Biol.*, n.s., 24: 124, 2003 (Váňa 2003).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005;

Gradstein and Holz 2005). LIMÓN: Limón cantón, NE del Cerro Chirripó, 3,775 m, *Chaverri et al. 1036*, det. Gradstein (U, USJ, **Morales 1991**). SAN JOSÉ: Chirripó National Park, *Chaverri et al. 1036* (**Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,350–3,450 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0136*, *SV/H-0189*, det. Váňa (PRC, Váňa **2003** as *Marsupella truncatoapiculata*); Pérez Zeledón cantón, Cerro de la Muerte, Páramo Buena Vista S of Cartago, 3–5 Sep 1973, *Griffin & Eakin 590 p.p.* (FLAS, **Dauphin 2005**; **Morales 1991**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Haplomitrium Nees, *Naturgesch. Eur. Leberm.* 1: 109, 1833 (Nees 1833a).

Haplomitrium blumei (Nees) R.M.Schust., *J. Hattori Bot. Lab.* 26: 225, 1963 (Schuster 1963a).

≡*Monoclea blumei* Nees, *Enum. Pl. Crypt. Javae*: 2, 1830 (Nees 1830). Type: Java.

=*Scalius andinus* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 532, 1885 (Spruce 1885), syn. fide Bartholomew-Began (1991). Type: Peru.

≡*Calobryum andinum* (Spruce) Steph., *Mém. Herb. Boissier* 16: 46 (=*Sp. Hepat. [Stephani]* 1: 400), 1900 (Stephani 1900a).

≡*Haplomitrium andinum* (Spruce) R.M.Schust., *J. Hattori Bot. Lab.* 26: 225, 1963 (Schuster 1963a).

COSTA RICA. S. loc. (Grolle 1993; Churchill et al. 2015; Ellis et al. 2016b; Gradstein 2021). SAN JOSÉ: Las Vueltas area, moist valley of Río Patria, vicinity of where regional road 113 crosses the river, 18 km of city center of San José, 10.06°N, 84.06°W, 2,100 m, 29 Mar 1973, *Crosby & Crosby 6427*, det. Gradstein 1999 (MO-2101719, **Morales 1991** as *Haplomitrium andinum*; **Kappelle 1996** as *Haplomitrium andinum*; **Dauphin 2005**).

Also reported from West-Central Tropical Africa, China, Eastern Asia, Indian Subcontinent, Malesia, Papuasia, Southwestern Pacific, the Caribbean, Western South America.

Harpalejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 126, 1893 (Schiffner 1893a).

Harpalejeunea cinchonae (Nees) Schiffn., *Hepat. (Engl.-Prantl)*: 127, 1893 (Schiffner 1893a).

≡*Lejeunea cinchonae* Nees, *Syn. Hepat.* 3: 342, 1845 (Gottsche et al. 1845a). Type: Peru.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Pérez Zeledón cantón, R. F. Los Santos, Cerro de La Muerte, cima, 9°33′20″N, 83°45′30″W, 1,475–3,400 m, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0152*, det. Dauphin Oct 2020 (CR-0003747184!, **this publication**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30918 p.p.* (JE, Schäfer-Verwimp 2014 as *Harpalejeunea* cf. *cinchonae*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). *NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 9°07′05′N, 82°52′40″W, 3,335 m, 12 Feb 1995, *Dauphin et al. 1553B*, det. Dauphin Jun 2017 (MO-6236082!, CR-1578117!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America.

Harpalejeunea oxyphylla (Nees et Mont.) Steph., *Sp. Hepat. (Stephani)* 5: 255, 1913 (Stephani 1913).

≡*Lejeunea oxyphylla* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 264, 1843 (Montagne 1843). Type: French Guiana.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 507* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

HONDURAS. S. loc. (Lücking 1995; Dauphin et al. 1998; Eggers et al. 2004; Lavocat Bernard and Reeb 2016). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, Dec 1927–Mar 1928, *Standley 55622 p.p.* (JE, **Herzog 1951**; **Grolle and Reiner-Drehwald 1999**).

***NICARAGUA.** *GRANADA: Granada municipio, W slope of Volcán Mombacho, 11°49–50′N, 85°58′W, 950–1,150 m, 1 Oct 1977, *Stevens 4384*, det. Dauphin May 2017 (MO-5238571! https://tropicos.org/specimen/90108677, **this publication**).

COSTA RICA. S. loc. (Lavocat Bernard and Reeb 2016). *ALAJUELA: San Carlos, Volcán Arenal, 2 km from the active crater, 14 Dec 1977, *Balázs 15/E*, det. Dauphin Jan 2017 (EGR!, **this publication**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-624* (hb. Lücking, **Lücking 1995**; **Dauphin et al. 1998**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

PANAMA. *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4634*, *4636*, det. Dauphin Aug 2017 (PMA, **this publication**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 667*, *674*, *686* (PMA, **Sierra et al. 2019a**). *COLÓN: Colón distrito, 9 km NW of Gamboa along Pipeline road, 26 Aug 1973, *Nee 6629*, det.

Dauphin Jun 2017 (MO-6236082!, **this publication**). PANAMA WEST: La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3131* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Harpalejeunea scabra Gradst. et Schäf.-Verw., *Cryptogamie, Bryologie* 32(2): 102, 2011 (Gradstein and Schäfer-Verwimp 2011). Type: Colombia.

≡*Harpalejeunea aspera* Grolle ex Gradst., D.G.Griffin, M.I.Morales et Nadkarni, *Caldasia* 23(1): 208, 2001 (Gradstein et al. 2001a), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Gradstein and Schäfer-Verwimp (2011).

COSTA RICA. S. loc. (Gradstein and Uribe 2016; Gradstein 2021). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,550 m, *Dauphin* (GOET, **Gradstein and Schäfer-Verwimp 2011**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Harpalejeunea aspera*).

Also reported from the Caribbean(?), Western South America.

Harpalejeunea stricta (Lindenb. et Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 259, 1913 (Stephani 1913).

≡*Lejeunea stricta* Lindenb. et Gottsche, *Syn. Hepat.* 5: 756, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Microlejeunea stricta* auct. Note: *Microlejeunea stricta* has many times been erroneously considered to be based on *Lejeunea stricta*, but it is now nomenclaturally a synonym of *Microlejeunea diversiloba*.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 131* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PROGRESO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1182* (USCG, Pérez 2009). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUICHÉ: S. loc., *Pérez 2184* (USCG, Pérez 2009 as *Microlejeunea stricta*). SAN MARCOS: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 20 Apr 1996, *Allen 17430*, det. Dauphin Jun 2017 (MO-6230327! https://tropicos.org/specimen/100367478, **this publication**). *COMAYAGUA: San Juanillo, Cordillera de Montecillos Biological Forest Reserve, 14°30′N, 87°53′W, 3 Jun 1993, *Liesner 26780 p.p.*, det. Dauphin Jun 2017 (MO-6699917! https://tropicos.org/specimen/100988214, **this publication**).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Microlejeunea stricta*; Schäfer-Verwimp 2014 as *Microlejeunea stricta*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/12*, *A/26/8*, *A/6/2*, *A/7/4*, *A/8/3* (**Winkler 1967** as *Microlejeunea stricta*).

***NICARAGUA.** *ATLÁNTICO NORTE: Waspán municipio, ~13 km above Kururia, 14°42′N, 84°11′W, 200 m, 2 Mar 1979, *Pipoly 3762*, det. Dauphin Jun 2017 (MO-5238572! https://tropicos.org/specimen/90108676, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (Schäfer-Verwimp 2014 as *Microlejeunea stricta*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2252 p.p.*, det. Morales (USJ, **Morales 1991** as *Microlejeunea stricta*; **Dauphin 2005** as *Microlejeunea stricta*). PUNTARENAS: Monteverde (**Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Microlejeunea stricta*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, Sillett et al. 1995 as *Harpalejeunea* cf. *stricta*); S. loc. (Merwin et al. 2001 as *Harpalejeunea* cf. *stricta*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34420/C* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34685*, *34700* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30759* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*); Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34756*, *34758* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34136/C* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*); Antón distrito, El Valle de Antón, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31042* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 668*, *671*, *673*, *691 p.p.*, *692*, *716* (PMA, **Sierra et al. 2019a** as *Microlejeunea stricta*). DARIÉN: Cerro Pirre (Stotler et al. 1998);

Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850 m, *Salazar Allen et al. 9445* (PMA, **Stotler et al. 1998**). PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Panama Province. This is probably referring to Panama West. VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30847* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Harpalejeunea subacuta A.Evans, *Bull. Torrey Bot. Club* 30(10): 547, 1903 (Evans 1903c). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Harpalejeunea* aff. *subacuta*). Note: We are not aware of any positively identified specimen from Zacapa.

EL SALVADOR. S. loc. (Schäfer-Verwimp 1999; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/2/5*, *A/16/1*, *A/26/1*, *etc.* (**Winkler 1967**).

COSTA RICA. S. loc. (Dauphin et al. 2008; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950 m, *Schäfer-Verwimp & Holz SV/H-0097*, det. Dauphin (CR, **Dauphin 2005**); Dota cantón, San Gerardo, Chacón Holiday Camp to waterfall, 9°32′13.81440″N, 83°49′27.2480″W, 1,950 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0097*, det. Dauphin (CR!, **this publication**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,260 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30876* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil.

Harpalejeunea tridens (Besch. et Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 263, 1913 (Stephani 1913).

≡*Lejeunea tridens* Besch. et Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: clxxxi, 1890 (Bescherelle and Spruce 1889). Type: Guadeloupe.

=*Harpalejeunea heterodonta* A.Evans, *Bull. Torrey Bot. Club* 30: 551, 1903 (Evans 1903c), syn. fide Gradstein (1989). Type: Puerto Rico.

=*Harpalejeunea exocellata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 144, 1951 (Herzog 1951). Lectotype (Grolle and Reiner-Drehwald 1999: 37): Costa Rica, Heredia, Cerro de las Caricias, 2,000–2,400 m, *Standley 51998* (JE-04002123! https://je.jacq.org/JE04002123, isolectotype JE-04002124 https://je.jacq.org/JE04002124), syn. nov. Note: based on description and illustration of the type, S. R. Gradstein considers it a synonym, and we publish it here as a new synonym with his approval.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). CARTAGO: Paraíso cantón, Tapantí National Park, Orosi Valley, ~9°46′N, 83°48′W, 600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0365/A* (CR, JE, **Blockeel et al. 2009**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, Sendero Orosilito, *Dauphin et al. 2604* (USJ, **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 47157* (**Herzog 1951**; **Morales 1991** as *Harpalejeunea exocellata*); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **TYPE** of *Harpalejeunea exocellata*, **Herzog 1951**; **Morales 1991**; **Grolle and Reiner-Drehwald 1999**; **Dauphin 2005** as *Harpalejeunea exocellata*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-529* (hb. Lücking, **Lücking 1995** as *Harpalejeunea heterodonta*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Harpalejeunea heterodonta*); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Jun 1992, *Lücking 92-468* (USJ, hb. Lücking, **Lücking 1995** as *Harpalejeunea heterodonta*; **Dauphin et al. 1998** as *Harpalejeunea heterodonta*; **Dauphin 2005**). PUNTARENAS: R. B. Santa Elena, 10°20′N, 84°48′W, 26 Mar 1992, Lyon 546, det. Whittemore 1995 (MO-4411437 https://tropicos.org/specimen/90029478).

PANAMA. S. loc. (Sierra et al. 2019b). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34216* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 697 p.p.*, *773* (PMA, **Sierra et al. 2019a**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30824*, *30841* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

Harpalejeunea uncinata Steph., *Hedwigia* 35(3): 97, 1896 (Stephani 1896) var. ***uncinata***. Lectotype: Cuba.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 157* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

BELIZE. S. loc. (**Fulford 1938**; Whittemore and Allen 1996). *TOLEDO: Punta Gorda, Feb 1933, *White 90*, det. Fulford 1937 (MO-5375157!, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena,

10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3311* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480–700 m, *Lücking 92-380* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-380* (hb. Lücking, **Lücking 1995**; **Dauphin et al. 1998**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-551* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Pérez Zeledón cantón, Cordillera de Talamanca, Quizarra east of San Isidro El General, ~700 m, 12 Jul 1985, *Eggers CR 7/12* (**Eggers et al. 2001**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Fulford et al. 1970; Lücking 1995; Dauphin et al. 1998; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño & Salazar Allen 3360*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,620–1,630 m, *Schäfer-Verwimp & Verwimp 34407/C*, *34414/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34669*, *34676/B* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Shattuck 568 p.p.* (**Haynes 1933**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Lutz, *Shattuck 568 p.p.* (F, PMA, **Stotler et al. 1998**). PANAMA: Panamá distrito, Canal Zone Forest Preserve, Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30846/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Herbertus Gray, *Nat. Arr. Br. Pl.* 1: 705, 1821 (Gray 1821).

Herbertus acanthelius Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 341, 1885 (Spruce 1885). Type: Ecuador.

≡*Herbertus juniperoideus* subsp. *acanthelius* (Spruce) K.Feldberg et Heinrichs, *Bot. J. Linn. Soc.* 151: 326, 2006 (Feldberg and Heinrichs 2006).

=*Herbertus serratus* Spruce, *Mem. Torrey Bot. Club* 1(3): 128, 1890 (Spruce 1890), syn. fide Feldberg and Heinrichs (2006). Type: Bolivia.

=*Schisma subdentatum* Steph., *Trans. Linn. Soc. London, Bot.* 6(1): 99, 1901 (Stephani 1901e), syn. fide Feldberg and Heinrichs (2006). Type: Guyana.

≡*Herbertus subdentatus* (Steph.) Fulford, *Mem. New York Bot. Gard.* 11(1): 104, 1963 (Fulford 1963a). Note: All material from Central America identified as *Herbertus subdentatus* belongs to *Herbertus sendtneri* (cf. Feldberg and Heinrichs 2006).

=*Schisma limbatum* Steph., *Sp. Hepat. (Stephani)* 4: 14, 1909 (Stephani 1909a), syn. fide van Reenen (1982). Type: Ecuador.

≡*Herbertus limbatus* (Steph.) Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938).

=*Schisma vulcanicum* Warnst., *Hedwigia* 57(1/2): 69, 1916 (Warnstorf 1916), syn. fide Dauphin (2005). Lectotype (Grolle 1964c: 173) or possibly holotype: Costa Rica, vulkan de Barba, mit *Macromitrium*, 1855, *Hoffmann* (B-300004253 https://herbarium.bgbm.org/object/B300004253).

=*Herbertus cancerinus* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 25, 1938 (Herzog 1938), syn. with *Herbertus serratus* fide Fulford (1963a). Lectotype (Fulford 1963a: 100): Costa Rica, Cerro de Las Lajas, 2,000–2,400 m, *Standley & Valerio 51629* (JE-04010836 https://je.jacq.org/JE04010836, isolectotype US-00072895 http://n2t.net/ark:/65665/3e397f894-9316-4d72-b1e1-3548c1ddac53).

=*Herbertus cancerinus* f. *foliis-minus-serratis* Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Yerba Buena, Prov. de Heredia, 2,000 m on tree, *Standley 50011* (JE-04010804 https://je.jacq.org/JE04010804, US-00072896 http://n2t.net/ark:/65665/3c32b5dad-1dc9-40a1-8661-a5b08bd9be68).

=*Herbertus pectinatus* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 27, 1938 (Herzog 1938), syn. with *Herbertus serratus* fide Fulford (1963a). Lectotype (Fulford 1963a: 100): Costa Rica, Cerros de Zurquí, *Standley & Valerio 50642* (JE-04010834 https://je.jacq.org/JE04010834, isolectotype US-00072897 http://n2t.net/ark:/65665/366cd81be-dd7d-4644-98a0-dc0ecb803a53).

=*Herbertus stenoschizon* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 27, 1938 (Herzog 1938), syn. with *Herbertus serratus* fide Fulford (1963a). Lectotype (Fulford 1963a: 100): Costa Rica, Cerros de Zurquí, Prov. de Heredia, 2,000–2,400 m, on tree, *Standley 50392* (JE-04010833 https://je.jacq.org/JE04010833, isolectotype US-00072900 http://n2t.net/ark:/65665/396f4181d-de9a-47ab-a37c-8b5c8fa53106).

=*Herbertus vulcanicola* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 25, 1938 (Herzog 1938), syn. with *Herbertus limbatus* fide Fulford (1963a). Lectotype (Fulford 1963a: 102, supplemented by Söderström and Hentschel 2023: 10): Costa Rica, slope Volcán Turrialba, 2,000–2,400 m, *Standley 35297* (JE-04010853 https://je.jacq.org/JE04010853, isolectotypes JE-04010808 https://je.jacq.org/JE04010808, US-00072901 http://n2t.net/ark:/65665/372d95699-cfe6-4040-b231-f01ae6f6a9b7).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Herbertus serratus*). QUETZALTENANGO: San Carlos Sija municipio, Getena area N of Sija, 2,895 m, 26 Jan 1945, *Sharp 2212*, det. Feldberg 2006 (NY, Pérez 2009 as *Herbertus limbatus*).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 101*

(U, **Kappelle 1996**); S. loc. (**Bonner 1966** as *Herbertus cancerinus*, *Herbertus pectinatus*, *Herbertus stenoschizon*, and *Herbertus limbatus*; Fulford 1967 as '*Herberta limbata*'; Gradstein et al. 1977 as *Herbertus limbatus*; Cole 1982, 1983, both as *Herbertus limbatus*; van Reenen 1982; Fulford and Sharp 1990 as *Herbertus limbatus*; Gradstein 1999a, 2013b as *Herbertus juniperoideus* subsp. *acanthelius*, 2021; Gradstein and Costa 2003 as *Herbertus serratus*; Dauphin 2005; Gradstein and Holz 2005; Santos 2008 as *Herbertus juniperoideus* subsp. *acanthelius*; Schäfer-Verwimp and Pócs 2009 as *Herbertus juniperoideus* subsp. *acanthelius*; Costa et al. 2020 as *Herbertus juniperoideus* subsp. *acanthelius*; Gradstein and Pócs 2021). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as '*Herberta limbata*'); Poás Volcano, *Griffin et al. 159* (FLAS, **Morales 1991** as *Herbertus limbatus*; **Dauphin 2005**); Poás Volcano, *Morales & Canessa 472* (USJ, **Morales and Griffin 1983** as *Herbertus serratus*; **Morales 1991** as *Herbertus serratus*; **Dauphin 2005** as *Herbertus serratus*); S. loc., Aug 1973, *Griffin et al.* (FLAS-020492, **Morales and Griffin 1983** as *Herbertus limbatus*). CARTAGO: Jimenéz cantón, Pejibaye, 900 m, *Standley & Valerio 47024* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); La Estrella, *Standley 39245b* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); Paraíso cantón, Cerro Asunción, 3,080 m, 1986, *Kappelle MK2073* (GOET, U, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); Paraíso cantón, Tapanti National Park, *Morales 1705* (**Morales 1991** as *Herbertus limbatus*); Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35297* (B-04312, **Herzog 1938** as '*Herberta*' *vulcanicola*; **Fulford 1963a** as *Herbertus limbatus*; **Bonner 1966** as *Herbertus vulcanicola*; **Morales 1991** as *Herbertus limbatus*; **Dauphin 2005**; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35316* (hb. Herzog, **Herzog 1938** as '*Herberta limbata*'; **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1493 p.p.* (USJ, **Morales 1991** also as *Herbertus limbatus*; **Dauphin 2005**); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1787* (**Morales 1991**; **Dauphin 2005**); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Pittier 6029*, *6046* (**Stephani 1893c** as '*Herberta acanthelia*'; **Morales 1991**; **Dauphin 2005**); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 1855, *Hoffmann* (B-04253, **Dauphin 2005**); Barva cantón, Volcán Barva, *Morales 1488*, *1524*, *1590*, *1641*, *1642*, *1654 p.p.*, *1667* (**Morales 1991** as *Herbertus limbatus*); Barva cantón, Volcán Barva, *Morales 1786* (USJ, **Morales 1991** as *Herbertus serratus*; **Dauphin 2005** as *Herbertus serratus*); Barva cantón, Volcán Barva, 2,800 m, *Valerio 26* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); Barva cantón, Volcán Barva, 1855, *Hoffman* (B-300004253 https://herbarium.bgbm.org/object/B300004253, **Grolle 1964c** as '*Herberta limbata*'); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley & Valerio 51629* (hb. Herzog, **Fulford 1963a** as *Herbertus serratus*; **Morales 1991** as *Herbertus serratus*; **Dauphin 2005** as *Herbertus serratus*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51629* (**Herzog 1938** as '*Herberta cancerina*'); San Isidro cantón, Cerro Zurquí, *Standley & Valerio 50330* (hb. Herzog, **Morales 1991** as *Herbertus limbatus*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley & Valerio 50574*, *50666*, *50714* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50330* (**Herzog 1938** as '*Herberta limbata*'); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50380*, *50392*, *50529* (B-04310, **Herzog 1938** as *Herbertus stenoschizon*; **Dauphin 2005** as *Herbertus serratus*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50642* (B-04269, **Herzog 1938** as '*Herberta pectinata*'); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50574*, *50666*, *50714* (**Herzog 1938** as '*Herberta limbata*'); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley & Valerio 50380* (JE, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley & Valerio 50392*, *50529*, *50642* (JE, hb. Herzog, **Fulford 1963a** as *Herbertus serratus*; **Morales 1991** as *Herbertus serratus*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley & Valerio 50011* (hb. Herzog, **Fulford 1963a** as *Herbertus serratus*; **Morales 1991** as *Herbertus serratus*; **Dauphin 2005** as *Herbertus serratus*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley & Valerio 50099* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 50011* (**Herzog 1938** as '*Herberta cancerina* f. *foliis minus serratis*'); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 50099* (B, **Herzog 1938** as '*Herberta limbata*'; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Parque Internacional La Amistad, Valle del Silencio, *Quesada 1184* (CR, **Dauphin 2005**). SAN JOSÉ: Dota cantón, Laguna de La Chonta, NE of Sta María de Dota, 2,000–2,100 m, *Standley 42238* (**Morales 1991** as *Herbertus limbatus*; **Dauphin 2005**); Moravia cantón, La Palma, 1,500 m, *Valerio 31* (hb. Herzog, **Fulford 1963a** as *Herbertus limbatus*; **Morales 1991** as *Herbertus limbatus*); Pérez Zeledón cantón, Cerro Buenavista, *Kuhbier 339* (B, **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Griffin & Eakin 576*, *599* (FLAS, **Morales 1991** as *Herbertus limbatus*); Pérez Zeledón cantón, Valle de Los Conejos, *Kuhbier 602*, det. Grolle (B, **this publication**).

PANAMA. CHIRIQUÍ: N of San Felix, *Mori & Kallunki 5850* (MO, **Stotler et al. 1998** as *Herbertus serratus*). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 373* (PMA, **Dauphin 2007**); Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1553* (GOET, CR, PMA, U, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *acanthelius*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Herbertus bivittatus Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 343, 1885 (Spruce 1885). Type: Peru.

≡*Schisma bivittatum* (Spruce) Steph., *Sp. Hepat. (Stephani)* 4: 11, 1909 (Stephani 1909a).

≡*Herbertus juniperoideus* (Sw.) Grolle subsp. *bivittatus* (Spruce) K.Feldberg et Heinrichs, *Bot. J. Linnean Soc.* 151: 328, 2006 (Feldberg and Heinrichs 2006).

=*Schisma divergens* Steph., *Sp. Hepat. (Stephani)* 4: 10, 1909 (Stephani 1909a), syn. fide Feldberg and Heinrichs (2006). Lectotype (van Reenen 1982: 118 as "holotype") if not holotype: Costa Rica: Hacum près Buenos Aires, *Tonduz*, ex hb. Levier 15674 (G-00052081 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=56194&lang=en).

≡*Herbertus divergens* (Steph.) Herzog, *Hedwigia* 74(2): 94, 1934 (Herzog 1934).

=*Herbertus bivittatus* Spruce var. *latilobus* Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938), syn. fide Fulford (1963a). Lectotype (Fulford 1963a: 98): Costa Rica, Cartago: Near Pejivalle, *Standley & Valerio 47021* (JE-04010828 https://je.jacq.org/JE04010828, isolectotype US-00072894 http://n2t.net/ark:/65665/36cd9e300-ab36-4b54-b30f-f9e3530bd2f1).

=*Herbertus penicillatus* Herzog, *Rev. Bryol. Lichénol.* 11(1): 27, 1939 (Herzog 1938), syn. fide Fulford (1963a). Lectotype (Fulford 1963a: 98): Costa Rica, San José, La Palma, *Standley 38080* (JE-04010854 https://je.jacq.org/JE04010854, isolectotypes B-04270, US-00072898 http://n2t.net/ark:/65665/31e26bb06-3bb1-4a25-9f0a-80f944fd77ce).

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Herbertus* cf. *divergens*). Note: We are not aware of any positively identified specimen from Alta Verapaz. *BAJA VERAPAZ: On Highway 14 to Cobán, 3 mi (4.8 km) S of Purulha, 1,500 m, 16 Jul 1977, *Croat 41233*, det. Feldberg 2005 (MO-3678998!, **this publication**).

BELIZE. TOLEDO: Bladen Nature Reserve, lower slopes of Richardson Peak, 16°33–35′N, 88°46′30″W, 4 Mar 1987, *Davidse & Brant 32162*, det. Feldberg 2005 (MO-36777984!, **this publication**); Columbia River Forest Reserve, 980 m, 1997, *Allen 19015* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*).

***HONDURAS.** *CORTÉS: Santa Cruz de Yojoa, N of Lago Yojoa 14°55′25″N, 87°58′39″W, 600 m, 4 Aug 1977, *Croat 42728A*, det. Dauphin Jun 2017 (MO-6697254! https://tropicos.org/specimen/100954512, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Herbertus divergens*; Holz 2006 as *Herbertus divergens*); Cordillera de Talamanca, 3,325 m, *Cleef et al.* (USJ, **Kappelle 1996** as *Herbertus divergens*); S. loc. (**Stephani 1909a** as *Schisma divergens*; Arnell 1956b as *Herbertus divergens*; Jovet-Ast 1959 as *Herbertus divergens*; **Bonner 1966** as *Herbertus bivittatus* var. *latilobus* and *Herbertus divergens*; Fulford 1967 as *Herbertus divergens*; Fulford et al. 1970 as *Herbertus divergens*; Cole 1982, 1983, both as '*Herberta divergens*'; **Geissler and Bischler 1990** as *Schisma divergens*; Frahm 2012b as *Herbertus divergens*; Oliveira-e-Silva and Yano 2000 as *Herbertus divergens*). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Herbertus divergens*). CARTAGO: El Guarco cantón, La Chonta (Dauphin 2005 as *Herbertus divergens*); Jimenéz cantón, Pejibaye, 900 m, *Standley 47024* (**Herzog 1938** as '*Herberta bivittata*'; **Dauphin 2005** as *Herbertus divergens*); Jimenéz cantón, Pejibaye, 900 m, *Standley 47173* (**Herzog 1938** as *Herbertus bivittatus* var. *latilobus* '*Herberta bivittata* var. *latiloba*'; **Dauphin 2005** as *Herbertus divergens*); Jimenéz cantón, Pejibaye, 900 m, 1926, *Standley & Valerio 47021* (JE, **TYPE** of *Herbertus bivittatus* var. *latilobus*, **Herzog 1938** as '*Herberta bivittata* var. *latiloba*'; **Fulford 1963a** as *Herbertus divergens*; **Morales 1991** as *Herbertus divergens*; **Dauphin 2005** as *Herbertus divergens*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); La Estrella, *Standley 39255* (**Herzog 1938** as '*Herberta bivittata*'; **Dauphin 2005** as *Herbertus divergens*); Pococí cantón, La Georgina (Dauphin 2005 as *Herbertus divergens*); Pococí cantón, La Georgina, *Griffin et al. 428, 476* (FLAS, **Morales 1991** as *Herbertus divergens*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Hammel 17360* (CR, **Dauphin 2005** as *Herbertus divergens*). LIMÓN: Cerro Chirripó, *Chaverri et al.* (USJ, **Morales 1991** as *Herbertus divergens*). PUNTARENAS: Buenos Aires, 1892, *Tonduz 15674* (G-52081 (ex hb. Levier), **TYPE** of *Schisma divergens*, **Fulford 1963a** as *Herbertus divergens*; **van Reenen 1982** as *Herbertus divergens*; **Morales 1991** as *Herbertus divergens*; **Dauphin 2005** as *Herbertus divergens*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); Coto Brus cantón, Fila Pittier, *Dauphin 1494* (CR, **Dauphin 2005** as *Herbertus divergens*); Coto Brus cantón, Parque Internacional La Amistad, Valle de Silencio, *Quesada 1184* (CR, **Dauphin 2005** as *Herbertus divergens*); Monteverde, <1,500 m (Dauphin 2005 as *Herbertus divergens*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Herbertus divergens*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Herbertus divergens*); Monteverde, 1,550 m, 1993, *Gradstein 9567* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); S. loc. (**Merwin et al. 2001** as *Herbertus divergens*). SAN JOSÉ: Chirripó National Park (Dauphin 2005 as *Herbertus divergens*); Chirropó National Park, *Cleef et al.* (USJ!, **this publication**); Cordillera de Talamanca, 2,900 m, 1999, *Holz 99-0535* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Herbertus divergens*); Dota cantón, Laguna de La Chonta, *Standley 42338* (**Fulford 1963a** as *Herbertus divergens*; **Morales 1991** as *Herbertus divergens*); Dota cantón, Laguna de La Chonta, NE of Sta María de Dota, 2,000–2,100 m, *Standley 42238* (**Herzog 1938** as '*Herberta bivittata*'); Dota cantón, San Gerardo (Dauphin 2005 as *Herbertus*

divergens); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Herbertus divergens*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Herbertus divergens*); Moravia cantón, La Palma, 1,600 m, 1924, *Standley 38080* (B-04270, JE, **TYPE** of *Herbertus penicillatus*, **Herzog 1938** as '*Herberta penicillata*'; **Fulford 1963a** as *Herbertus divergens*; **Bonner 1966** as *Herbertus penicillatus*; **Morales 1991** as *Herbertus divergens*; **Dauphin 2005** as *Herbertus divergens*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); Pérez Zeledón cantón, upper Río Talari, *Kuhbier 561* (B, **Dauphin 2005** as *Herbertus divergens*).

PANAMA. S. loc. (**Gradstein 1993** as *Herbertus divergens*; Stotler et al. 1998 as *Herbertus divergens*). CHIRIQUÍ: Boquete distrito, Cerro Azul, *Croat 26895* (**Stotler et al. 1998** as *Herbertus divergens*); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Spörle 1.42* (PMA, **Spörle 1990** as *Herbertus divergens*); Gualaca distrito, Hornito, Fortuna, 1,170 m, *Stotler & Crandall-Stotler 3503* (ABSH, PMA, **Stotler et al. 1998** as *Herbertus divergens*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: La Pintada distrito, El Copé, *Vinda 344*, *356* (PMA, **Stotler et al. 1998** as *Herbertus divergens*); La Pintada distrito, N of El Copé, *Croat 44693b*, *44711* (MO, **Stotler et al. 1998** as *Herbertus divergens*). DARIÉN: Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9280* (PMA, U, **Stotler et al. 1998** as *Herbertus divergens*); Cerro Pirre, *Salazar Allen & Gradstein 9286* (H, **Stotler et al. 1998** as *Herbertus divergens*; **Juslén 2006** as *Herbertus divergens*; **Gradstein et al. 2018a**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Herbertus divergens*). NGÄBE-BUGLÉ COMARCA: Kankintú distrito, Cerro Colorado, *Allen 5416* (MO, **Stotler et al. 1998** as *Herbertus divergens*). PANAMA WEST: S. loc. (He et al. 2016 as *Herbertus divergens*). Note: We are not aware of any firsthand report from Panama West. PANAMA: Panamá distrito, Cerro Jefe, 900–1,000 m, *Spörle* (PMA, **Stotler et al. 1998** as *Herbertus divergens*); Panamá distrito, Cerro Jefe, 1967, *Stimson 5415* (G, MO, **Stotler et al. 1998** as *Herbertus divergens*; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); Panamá distrito, Cerro Jefe, 1,200 m, 1991, *Salazar Allen et al. 9286* (G, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *bivittatus*); Panamá distrito, Cerro Jefe, forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen et al. 5199* (PMA, **Stotler et al. 1998** as *Herbertus divergens*). VERAGUAS: Santa Fe distrito, Cerro Tute, *Moran 4017* (MO, **Stotler et al. 1998** as *Herbertus divergens*).

COCOS I. Cerro Escondido, 5°32′57″N, 87°03′56″W, 400 m, *Dauphin 1146*, det. G. Dauphin Feb 2021 (USJ-47198!, CR-4468302!, W-0207441! https://w.jacq.org/W0207441, **this publication**); Cerro Escondido, 5°32′57″N, 87°03′56″W, 400 m, 15 Feb 1994, *Dauphin 1146* (USJ, **Dauphin 1995**, **1999**, **2005**, all as *Herbertus divergens*).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Herbertus durandii (Steph.) Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 25, 1938 (Herzog 1938).

≡*Schisma durandii* Steph., *Trans. Linn. Soc. London, Bot.* 6(1): 99, 1901 (Stephani 1901e). Type: Guyana.

COSTA RICA. S. loc. (**Stephani 1901e** as *Schisma durandii*, **1909a** as *Schisma durandii*; Bonner 1966). HEREDIA: Barva cantón, Volcán Barva, 3,000 m, *Valerio 1* (hb. Herzog, **Herzog 1938**).

Also reported from Northern South America.

Herbertus juniperoideus (Sw.) Grolle, *Rev. Bryol. Lichénol.* 30(1/2): 80, 1961 (Grolle 1961).

≡*Jungermannia juniperoidea* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

≡*Herberta juniperina* (Sw.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 397, 1877 (Trevisan 1877), nom. illeg. (ICN2018 Art. 61.1; orthographic variant).

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**).

BELIZE. TOLEDO: Bladen Nature Reserve, lower slopes of Richardson Peak, 16°33–35′N, 88°46′30″W, 4 Mar 1987, *Davidse & Brant 32162*, det. Feldberg 2005 (MO-36777984!, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15379* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15397* (BRH, MO, **Whittemore and Allen 1996**).

HONDURAS. LEMPIRA: Gracias municipio, Montaña de Celaque, Filo Seco, 14°32′N, 88°41′W, 2,700–2,730 m, 14 May 1992, *Allen 12097* (H, MO, **Juslén 2006**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 1731* (U, **Kappelle 1996**); S. loc. (Fulford 1963a; Miller et al. 1983; Gradstein 1999a; Gradstein and Holz 2005; Dauphin 2005). ALAJUELA: Alajuela cantón, Carrizal, 2,800 m, Jan 1889, *Pittier* (G-009954, **Schuster 1994**). HEREDIA: Barva cantón, between Barva and Carrizal, *Pittier 6013* (**Stephani 1893c** as '*Herberta juniperina*'; **Morales 1991**; **Dauphin 2005**); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1493 p.p.* (USJ, **Morales 1991**); Barva cantón, Volcán Barva, *Griffin et al. 253* (**Dauphin 2005**); Barva cantón, Volcán Barva, *Griffin et al. D253* (USJ, FLAS, **Morales 1991**); Barva cantón, Volcán Barva, *Morales 1593*, *1623*, *1637* (USJ, **Morales 1991**); Barva cantón, Volcán Barva, 2,650–2,900 m, 1994, *Gradstein et al. 9659* (GOET, **Feldberg and Heinrichs 2006**). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Monteverde Cloud Forest Preserve, 1,500–1,550 m, 1992, *Ingram et al. 1380* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *juniperoideus*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); S. loc. (**Merwin et al. 2001**).

PANAMA. S. loc. (Gradstein 1999a). CHIRIQUÍ: Between Concepción and Volcán, *D'Arcy* (MO, **Stotler et al. 1998**); Boquete distrito, Cerro Azul, *Croat 26823* (MO, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Cerro Pata de Macho, 1,700–1,800 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Mono, 1,100–1,300 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Cerro Punta, *D'Arcy et al. 13306E* (MO, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: La Pintada distrito, 4 mi (6.4 km) N of Llano Grande, *Antonio 3567* (MO, **Stotler et al. 1998**); La Pintada distrito, El Potroso, *Croat 44712a* (MO, **Stotler et al. 1998**); La Pintada distrito, El Potroso, *Sytsma 1798* (**Stotler et al. 1998**); La Pintada distrito, N of El Copé, *Antonio 3266* (MO, **Stotler et al. 1998**); La Pintada distrito, N of El Copé, *Croat 44690b* (MO, **Stotler et al. 1998**); La Pintada distrito, N of El Copé, *Knapp & Dressler 3411* (MO, PMA, **Stotler et al. 1998**). DARIÉN: Cerro Pirre, *Folsom 6391* (MO, **Stotler et al. 1998**); Chepigana distrito, Cerro Sapo, *Hammel 1246* (MO, **Stotler et al. 1998**); Pinogana distrito, Cerro Tacarcuna, *Hammel et al. 16563* (MO, **Stotler et al. 1998**); Pinogana distrito, S of El Real, *McPherson 11623C* (MO, **Stotler et al. 1998**); Summit of Pirre Massif, 1,200–1,350 m, *Allen 8850*, *8874*, *8881* (MO, **Stotler et al. 1998**). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1553* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**; **Feldberg et al. 2007**). NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, *Croat 33231A* (MO, **Stotler et al. 1998**). PANAMA: Panamá distrito, Cerro Jefe, *Croat 13102B*, *13103*, *35930* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *D'Arcy 11380A* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Gentry 6169* (**Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Lewis & Dressler 7588* (**Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Nee & Mori 14212* (**Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Sytsma 1991* (**Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, Escuela Agrícola Alto Piedra, *Croat & Folsom 33933*, *33936* (MO, **Stotler et al. 1998**).

Also reported from West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, Indian Subcontinent(?), Indo-China(?), Malesia(?), Southwestern Pacific(?), Northeastern Pacific(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Herbertus pensilis (Taylor) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 397, 1877 (Trevisan 1877).

≡*Sendtnera pensilis* Taylor, *London J. Bot.* 5: 372, 1846 (Taylor 1846a). Type: Ecuador.

≡*Herbertus juniperoideus* subsp. *pensilis* (Taylor) K.Feldberg et Heinrichs, *Bot. J. Linn. Soc.* 151: 329, 2006 (Feldberg and Heinrichs 2006).

=*Schisma angustifolium* Steph., *Sp. Hepat. (Stephani)* 4: 17, 1909 (Stephani 1909a), syn. fide Fulford (1963a). Type: Puerto Rico.

≡*Herbertus angustifolius* (Steph.) Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 24, 1939 (Herzog 1938).

=*Herbertus costaricensis* Steph., *Bull. Soc. Roy. Bot. Belgique* 31: 178, 1893 (Stephani 1893c), syn. fide Feldberg and Heinrichs (2006). Lectotype (Fulford 1963a: 96): Costa Rica, forêts du Barba, *Pittier 6048* (G-00042653 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=56286&lang=en, isolectotype PC).

≡*Schisma costaricensis* (Steph.) Steph., *Sp. Hepat. (Stephani)* 4: 16, 1909 (Stephani 1909a).

=*Herbertus costaricensis* f. *brevifolius* Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Cerros de Zurquí, northeast of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, *Standley & Valerio 50647* (US-04667618 http://n2t.net/ark:/65665/30fd8e29b-c44b-4a60-9875-95b792d5df99).

=*Herbertus angustifolius* f. *minor* Herzog, *Rev. Bryol. Lichénol.* 11(1): 24, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Morales (1991). Original material: Costa Rica, Heredia, Cerros de Zurquí, 2,000–2,400 m, *Standley & Valerio 50292* (JE-04010823 https://je.jacq.org/JE04010823).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, 4 mi NE of Purulhá, 17 Jul 1977, *Croat 41312B*, det. Feldberg 2005 (MO-3955383, Pérez 2009 as *Herbertus juniperoideus* subsp. *pensilis*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 62*, *88*, *210*, *244*, *453*, *473* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, Cerro La Pimienta, 13°44′40″N, 84°59′55″W, 14 Apr 1979, *Grijalva 348*, det. Allen 2016 (MO-6692295! https://tropicos.org/specimen/100896353, **this publication** as *Herbertus juniperoideus* subsp. *pensilis*); Siuna municipio, Cerro La Pimienta, 13°44′40″N, 84°59′55″W, 17 Apr 1979, *Pipoly 5278*, det. Feldberg 2005 (MO-5223961! http://tropicos.org/specimen/90243563, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle & Abarca 637* (CR, **Kappelle 1996**); S. loc. (**Stephani 1909a** as *Schisma costaricensis*; **Bonner 1966** as *Herbertus costaricensis* and *Herbertus angustifolius*; Pócs et al. 1967; Fulford et al. 1970; van Reenen 1982; Cole 1982, 1983, both as '*Herberta pensilis*' and '*Herberta costaricense*'; Fulford 1987; Fulford and Sharp 1990; Geissler and Bischler 1990 as *Schisma costaricensis*; Lavocat Bernard et al. 2009 as *Herbertus juniperoideus* subsp. *pensilis*; Schäfer-Verwimp and Reiner-Drehwald 2009 as *Herbertus juniperoideus* subsp. *pensilis*); S. loc., *Brenes 16207* (**Fulford 1963a**; **Dauphin 2005**). ALAJUELA: Poás Volcano, *Griffin & Eakin* (FLAS, **Morales 1991**; **Dauphin 2005**); Poás Volcano, *Morales 483* (USJ, **Morales 1991**; **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest, 5 Jul 2007, *Norris 109973*

(UC, **Norris et al. 2017**). CARTAGO: La Union cantón, Cerro de La Carpintera, 1,500–1,800 m, *Standley 53719* (**Herzog 1938** as *Herbertus costaricensis*; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Morales 177*, *188*, *241* (USJ, FLAS, **Morales 1991**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Traña 55* (CR, **Dauphin 2005**); Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 1841* (CR, **Dauphin 2005**); Tenorio Volcano, 1,600–1,900 m, *Morales 1852* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *pensilis*). HEREDIA: Barva cantón, Volcán Barva, 1,950 m (Dauphin 2005); Barva cantón, Volcán Barva, 1890, *Pittier 6048* (G, **Stephani 1893c** as *Herbertus costaricensis*; **Fulford 1963a**; **Morales 1991**; **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *pensilis*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley & Valerio 50292*, *50506*, *50520*, *50647* (**Fulford 1963a**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50292* (**Herzog 1938** as *Herbertus angustifolius* f. *minor*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50506* (**Herzog 1938** as *Herbertus costaricensis*; **Morales 1991**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50520* (**Herzog 1938** as *Herbertus angustifolius*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50642* (B-04269, **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50647* (**Herzog 1938** as *Herbertus costaricensis* f. *brevifolius*; **Morales 1991**). PUNTARENAS: Coto Brus cantón, Cerro Paraguas, *Dauphin 1776* (CR, **Dauphin 2005**); Coto Brus cantón, Parque Internacional La Amistad, Sector Pittier, La Escuadra, *Dauphin 1517* (CR, **Dauphin 2005**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, Checo Trail near Adono clearing, 3 Aug 1968, *James, W.* (US, R, **Reed and Robinson 1971**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, Feb 1969, *James, W. 1969-14* (US, **Reed and Robinson 1971**); Monteverde, 1,830 m, 1992, *Lyon 399* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *pensilis*); Monteverde, 1,550 m, 1993, *Gradstein 9607* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *pensilis*); S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Moravia cantón, Camino a La Hondura, *Griffin et al. 372* (FLAS, **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, ~1,600 m, *Standley 38036* (**Herzog 1938** as *Herbertus costaricensis*; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38482* (**Herzog 1938** as *Herbertus costaricensis*; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, summit of Volcán Barú, 8°48′30″N, 82°32′30″W, 27 Nov 1975, *D'Arcy 10182A*, det. Dauphin Jun 2017 (MO-6692250!, **this publication**); Gualaca distrito, Fortuna Dam, *McPherson 13595H* (MO, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Cerro Pata de Macho, 1,700–1,800 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Mono, 1,100–1,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.26* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 698* (PMA, **Stotler et al. 1998**); Renacimiento distrito, Cerro Pando, *Mori & Bolten 7314* (MO, **Stotler et al. 1998**); Tierras Altas distrito, Cerro Punta, *McPherson 9375* (MO, **Stotler et al. 1998**). COCLÉ: Antón distrito, N of El Valle, *Knapp & Dressler 4921* (MO, **Stotler et al. 1998**); Penonomé distrito, Cerro Pillon, 1973, *Croat 22940* (GOET, **Feldberg and Heinrichs 2006** as *Herbertus juniperoideus* subsp. *pensilis*). NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, *Croat 33231B* (MO, **Stotler et al. 1998**); Nole Duima distrito, Cerro Colorado Copper Mine, *Croat 33232* (MO, **Stotler et al. 1998**). PANAMA: Panamá distrito, Cerro Jefe, *Knapp 3510* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen et al. 5206* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Herbertus sendtneri (Nees) Lindb., *Hepat. Scand. Exsicc.*: no. 4, 1874 (Lindberg aström 1874).

≡*Schisma sendtneri* Nees, *Naturgesch. Eur. Leberm.* 3: 575, 1838 (Nees 1838b). Type: Austria.

=*Schisma grossispinum* Steph., *Sp. Hepat. (Stephani)* 4: 10, 1909 (Stephani 1909a), syn. fide Feldberg and Heinrichs (2005a). Type: Guyana.

≡*Herbertus grossispinus* (Steph.) Fulford, *Mem. New York Bot. Gard.* 11(1): 98, 1963 (Fulford 1963a).

=*Herbertus durandii* (Steph.) Herzog var. *dissectus* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 25, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 39.1; no Latin description), syn. fide Feldberg and Heinrichs (2005a). Original material (Fulford 1963a: 104 as "lectotype"): Costa Rica, Heredia: Cerros de Zurquí, 2,000–2,400 m, *Standley & Valerio 50338* (JE-04010809 https://je.jacq.org/JE04010809, also in US-04667650 http://n2t.net/ark:/65665/3ed9e4d50-7465-4b82-8d46-2c605294398c).

=*Herbertus subdentatus* auct. (cf. Feldberg and Heinrichs 2006).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Herbertus subdentatus*; **Holz and Gradstein 2005b** as *Herbertus subdentatus*); Cordillera de Talamanca, *Kappelle 4669* (U, **Kappelle 1996** as *Herbertus subdentatus*); S. loc. (Fulford 1967 as *Herbertus subdentatus*; Cole 1982, 1983, both as '*Herberta subdentatus*' and '*Herberta grossispina*'; Fulford and Sharp 1990 as *Herbertus subdentatus*; Gradstein 1999a as *Herbertus*

subdentatus; Dauphin 2005 as *Herbertus subdentatus*; Gradstein and Holz 2005 as *Herbertus subdentatus*; Schäfer-Verwimp and Pócs 2009; Váňa and Engel 2013); S. loc., *Holz & Schäfer-Verwimp CR 00-077* (GOET, **Feldberg et al. 2004**; **Feldberg and Heinrichs 2005b, 2006**; **Heinrichs et al. 2010**; **Gradstein et al. 2018a**). ALAJUELA: San Ramón cantón, 10°08′N, 84°29′W, 10 Sep 1979, *Stevens 14067*, det. Whittemore (CR, **Dauphin 2005** as *Herbertus grossispinus*). CARTAGO: El Guarco cantón, Cerro de La Muerte, 3 de Junio, 2,650–2,800 m, *Gradstein & Mues 9711* (GOET, **Feldberg et al. 2004**; **Feldberg and Heinrichs 2005b, 2006**; **Gradstein et al. 2018a**); Pococí cantón, La Georgina, *Griffin et al. 557* (FLAS, **Morales 1991** as *Herbertus subdentatus*; **Dauphin 2005** as *Herbertus subdentatus*). HEREDIA: Barva cantón, Volcán Barva, 3,000 m, *Valerio 1*, *5* (hb. Herzog, **Fulford 1963a** as *Herbertus subdentatus*; **Morales 1991** as *Herbertus subdentatus*; **Dauphin 2005** as *Herbertus subdentatus*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50338* (**Herzog 1938** as '*Herberta durandii* var. *dissecta*'); San Isidro cantón, Cerro Zurquí, NE of San Isidro, 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50338* (JE, US, **Fulford 1963a** as *Herbertus subdentatus*; **Bonner 1966** as *Herbertus durandii* var. *dissectus*; **Morales 1991** as *Herbertus subdentatus*; **Dauphin 2005** as *Herbertus subdentatus*; **Feldberg and Heinrichs 2005a**). LIMÓN: Talamanca cantón, Cerro Kámuk, *Morales 1695* (**Morales 1991** as *Herbertus subdentatus*; **Dauphin 2005** as *Herbertus subdentatus*). SAN JOSÉ: Chirripó, *Morales 1848* (**Morales 1991** as *Herbertus subdentatus*; **Dauphin 2005** as *Herbertus subdentatus*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Herbertus subdentatus*); Dota cantón, San Gerardo (Dauphin 2005 as *Herbertus subdentatus*); Dota cantón, San Gerardo, 2,450 m, 11 Dec 1999, *Holz CR 99/910* (**He and Sun 2017**); Pérez Zeledón cantón, Cerro Cuericí, *Dauphin et al. 3584* (CR!, **this publication**); Pérez Zeledón cantón, Cerro de La Muerte, Páramo Buena Vista, 3,300 m, 30 Sep 1999, *Heinrichs et al. 4337* (GOET, **Feldberg et al. 2004**; **Feldberg and Heinrichs 2006**; **He and Sun 2017**); Pérez Zeledón cantón, Páramo Buena Vista, *Dauphin 2635* (CR, **Dauphin 2005** as *Herbertus subdentatus*); Pérez Zeledón cantón, Páramo Buenavista, 9°33′20″N, 83°45′30″W, *Schäfer-Verwimp & Holz SV/H-0142*, det. Dauphin (CR, **Dauphin 2005** as *Herbertus grossispinus*); Pérez Zeledón cantón, Valle de Los Conejos, *Kuhbier 602*, det. Grolle (B, **Dauphin 2005** as *Herbertus subdentatus*).

PANAMA. S. loc. (Gradstein 1999a as *Herbertus subdentatus*; Váňa and Engel 2013). CHIRIQUÍ: Boquete distrito, Alto Respinga, above Cerro Punta, 8°51′N, 82°32′W, 27 Nov 1975, *D'Arcy 10100E*, det. Dauphin Jun 2017 (MO-6691272!, **this publication**); Volcán Barú, *Mori & Bolten 7349*, *7448* (MO, **Stotler et al. 1998** as *Herbertus subdentatus*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: La Pintada distrito, El Copé, *McPherson 7694G* (MO, **Stotler et al. 1998** as *Herbertus grossispinus*). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1576 p.p.* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Herbertus subdentatus*; **Dauphin 2007** as *Herbertus subdentatus*); Parque Internacional La Amistad, Cerro Fábrega, 3,200 m, 1995, *Dauphin et al. 1576* (GOET, **Feldberg and Heinrichs 2005b, 2006**; **Heinrichs et al. 2010**; **Gradstein et al. 2018a**).

Also reported from Middle Europe, Macaronesia, East Tropical Africa, Middle Atlantic Ocean, China, Indian Subcontinent, Indo-China, Malesia, Papuasia, Subarctic America, Western Canada, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Subantarctic Islands.

Heteroscyphus Schiffn., Österr. Bot. Z. 60(5): 171, 1910 (Schiffner 1910).

Heteroscyphus combinatus (Nees) Schiffn., Österr. *Bot. Z.* 60(5): 172, 1910 (Schiffner 1910).

≡*Jungermannia combinata* Nees, *Enum. Pl. Crypt. Javae*: 22, 1830 (Nees 1830). Type: Brazil.

≡*Chiloscyphus combinatus* (Nees) Nees, *Syn. Hepat.*: 182, 1845 (Gottsche et al. 1845b).

GUATEMALA. S. loc. (Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, *Türckheim 5984* (G, JE, **Fulford 1976**; **Freire 2006**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 214* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1397* (USCG, Pérez 2009). QUETZALTENANGO: S. loc., *Standley 83745A* (F, **Fulford 1976**; **Freire 2006**; **Pérez 2009**); S. loc., *Standley 83748 p.p.* (F, **Fulford 1976**; **Freire 2006**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

HONDURAS. S. loc. (Fulford and Sharp 1990). COMAYAGUA: Siguatepeque municipio, El Achote, *Yuncker 6407* (DPU, **Fulford 1976**).

COSTA RICA. PUNTARENAS: Monteverde, 3 Aug 1968, *James s.n.* (R, US, Reed and Robinson 1971; Morales 1991); Monteverde cantón, Lee's Tract, 10 Nov 1970, *James 1970-67*, det. Dauphin Jun 2017 (MO-6163053!, **this publication**).

PANAMA. S. loc. (**Mitten 1854b** as *Chiloscyphus combinatus*; Schiffner 1898a as *Chiloscyphus combinatus*; Fulford and Sharp 1990; Stotler et al. 1998). PANAMA: Panamá distrito, Taboga, *Seemann* (NY, **Fulford 1976**; **Stotler et al. 1998**).

Also reported from Australia, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Heteroscyphus elliottii (Steph.) Pagán, *Bryologist* 42(1): 7, 1939 (Pagán 1939a) var. ***elliottii***.

≡*Chiloscyphus elliottii* Steph., *Bull. Herb. Boissier*, sér. 2, 8(1): 55(231), 1908 (Stephani 1908c). Type: Dominica.

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Yano and Peralta 2008; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Reiner-Drehwald 2009). CHIQUIMULA: Monte Virgen, *Steyermark 42670 p.p.* (F, **Fulford 1976**; **Freire**

2006); S. loc., *Steyermark 31015 p.p., 32485* (F, **Fulford 1976; Freire 2006; Pérez 2009**). EL PROGRESO: Summit of Volcán Luisa, *Steyermark 43118* (F, **Fulford 1976; Freire 2006; Pérez 2009**).

Also reported from Mexico, the Caribbean, Northern South America.

Heteroscyphus marginatus (Steph.) Fulford, *Mem. New York Bot. Gard.* 11(4): 491, 1976 (Fulford 1976).

≡*Lophocolea marginata* Steph., *Sp. Hepat. (Stephani)* 6: 282, 1922 (Stephani 1922). Type: Ecuador.

=*Lophocolea effusidens* auct. (Costa Rican synlectotype, cf. Fulford 1976).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Levier 15676* (NY, **Kappelle 1996**); S. loc. (Schäfer-Verwimp 2014; Gradstein 2021); S. loc., *Tonduz* (**Stephani 1907a** as *Lophocolea effusidens*). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1495* (CR, **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Alto de Dota, *Tonduz 15676* (G, NY, JE, **SYNTYPE** of *Lophocolea effusidens*, **Stephani 1907a** as *Lophocolea effusidens*; **Fulford 1976; Morales 1991; Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. S. loc. (Gradstein 2021). CHIRIQUÍ: Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 751 p.p.* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,450–1,660 m, *Schäfer-Verwimp & Verwimp 34384/C, 34428* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America, Brazil.

*****Heteroscyphus miradorensis*** (Steph.) Schiffn., Österr. *Bot. Z.* 60(5): 172, 1910 (Schiffner 1910).

≡*Chiloscyphus miradorensis* Steph., *Bull. Herb. Boissier*, sér. 2, 8(1): 56 (=*Sp. Hepat. [Stephani]*: 3, 232), 1908 (Stephani 1908c). Type: Mexico.

***HONDURAS.** *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 18 Mar 1993, *Allen 14134*, det. Dauphin Jun 2017 (MO-5227620! http://tropicos.org/specimen/90096777, **this publication**).

***COSTA RICA.** *CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, 7 Dec 1982, *Gómez-Pignataro 19347*, det. Dauphin Jun 2017 (MO-6230333! http://tropicos.org/specimen/100366544, **this publication**). *PUNTARENAS: Monteverde cantón, Checo Trail, 3 Aug 1968, *James*, det. Dauphin Jun 2017 (MO-6163055!, **this publication**); Monteverde cantón, Lee's Tract, 10 Nov 1970, *James 1970-70*, det. Dauphin Jun 2017 (MO-6163054!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Brazil(?).

Heteroscyphus polyblepharis (Spruce) Schiffn., Österr. *Bot. Z.* 60(5): 172, 1910 (Schiffner 1910).

≡*Chiloscyphus polyblepharis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 442, 1885 (Spruce 1885). Type: Ecuador.

GUATEMALA. S. loc. (van Zanten and Gradstein 1988; Holz et al. 2001; Gradstein 2021). HUEHUETENANGO: Cerro Heutz, *Steyermark 48574 p.p.* (F, **Fulford 1976; Freire 2006; Pérez 2009**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo, "Los Robles" trail, 2,260 m, 4 Jan 2000, *Holz CR 00-236, Schäfer-Verwimp & Holz SV/H-0495* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001; Dauphin 2005**).

Also reported from Northern South America, Western South America, Brazil.

Isotachis Mitt., *Bot. Antarct. voy. II (Fl. Nov.-Zel. 2): 148, 1854 (Mitten 1854a).

Isotachis erythrorhiza (Lehm. et Lindenb.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 338, 1885 (Spruce 1885).

≡*Jungermannia erythrorhiza* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 44, 1832 (Lehmann 1832). Type: St. Vincent.

COSTA RICA. CARTAGO: Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879** as *Jungermannia erythrorhiza*); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 468* (BM, **Polakowsky 1877** as *Jungermannia erythrorhiza*).

Also reported from the Caribbean, Brazil.

Isotachis lopezii (R.M.Schust.) Gradst., *Mem. New York Bot. Gard.* 84: 66, 1999 (Gradstein 1999a).

≡*Ruizanthus lopezii* R.M.Schust., *Phytologia* 39(4): 241, 1978 (Schuster 1978a). Type: Venezuela.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (León et al. 1998; Gradstein 1999a; Gradstein and Holz 2005; Benitez et al. 2013; Gradstein 2021; Gradstein and Pócs 2021). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9726, 9729, 9747, 9750, 9751* (USJ, **Gradstein et al. 1994** as *Ruizanthus lopezii*; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America.

Isotachis multiceps (Lindenb. et Gottsche) Gottsche, *Mexik. Leverm.*: 105, 1863 (Gottsche 1863).

≡*Jungermannia multiceps* Lindenb. et Gottsche, *Syn. Hepat.* 5: 687, 1847 (Gottsche et al. 1847). Type: Mexico.

≡*Hypoisotachis multiceps* (Lindenb. et Gottsche) R.M.Schust. ex J.J.Engel et G.L.Merr., *Fieldiana, Bot.*, n.s., 37: 46, 1997 (Engel and Smith Merrill 1997).

=*Isotachis parva* Steph., *Arch. Mus. Nac. Rio de Janeiro* 13: 113, 1903 (Dusén 1905), syn. fide Fulford (1963a). Type: Brazil.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Cole 1982, 1983; Fulford and Sharp 1990; Engel and Smith Merrill 1997 as *Hypoisotachis*

multiceps; Gradstein 1999a; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Schuster 2021). ALAJUELA: Poás Volcano, *Griffin & Araya 83* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 146* (FLAS-020491, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Zurquí, *Standley & Valerio 50316* (hb. Herzog, B-04778, **Hatcher 1960**; **Fulford 1963a**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50316* (B-04778, **Herzog 1938** as *Isotachis parva*); San Rafael cantón, road between San Rafael and Rio Las Vueltas, 10°05′N, 84°04′W, 4 Sep 1979, *Stevens 13948*, det. Dauphin Jun 2017 (MO-6238934!, **this publication**); Sarapiquí cantón, Rara Avis, *Dauphin 2199* (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Quebrada González, 450 m, 19 Apr 2001, *Dauphin 2956* (NY, **Campos and Uribe 2012**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, 2,300 m, 7 Feb 1995, *Dauphin 1491* (USJ, NY, **Dauphin 2005**; **Campos and Uribe 2012**). SAN JOSÉ: Cerro Zurquí (Dauphin 2005); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Gradstein 9747* (U, USJ, **Gradstein et al. 1994**); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 468* (BM, **Hatcher 1960**; **Fulford 1963a**; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31001* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 698* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Internacional La Amistad, trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3478* (ABSH, **Stotler et al. 1998**; **Forrest and Crandall-Stotler 2004, 2005**; **Crandall-Stotler et al. 2005**; **Forrest et al. 2006**; **Hentschel et al. 2006a, 2007c**; **Masuzaki et al. 2010**; **Cailliau et al. 2013**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 258* (**Dauphin 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Isotachis serrulata (Sw.) Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 121, 1864 (Gottsche 1864).

≡*Jungermannia serrulata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

=*Jungermannia haematodes* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 42, 1832 (Lehmann 1832), syn. fide Gradstein et al. (2003). Type: Guadeloupe.

≡*Isotachis haematodes* (Lehm. et Lindenb.) Gottsche, *Ann. Sci. Nat., Bot.*, ser. 5, 1: 122, 1864 (Gottsche 1864).

=*Isotachis lindigiana* Gottsche, *Ann. Sci. Nat., Bot.*, ser. 5, 1: 123, 1864 (Gottsche 1864), syn. fide Campos and Uribe (2012).

=*Isotachis madida* auct. non typus. Note: syn. to *Isotachis humectata* and restricted to temperate South America.

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Rico and Pócs 2004; Schuster 2021). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim* (NY, BM, **Hatcher 1960**; **Fulford 1963a**; **Pérez 2009**); S. loc., 5 Apr 1892, *Türckheim* (NY, BM, W, **Freire 2006**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Cole 1982, 1983). ALAJUELA: Poás Volcano, Aug 1973, *Griffin et al. 20063*, det. Campos 2009 (MO-5142594!, **this publication**); Poás Volcano, Jul 1977, *Griffin & Araya 1*, *30*, *68*, *69*, *82* (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 91* (FLAS-020063, USJ, **Morales and Griffin 1983** as *Isotachis lindigiana*; **Morales 1991** as *Isotachis lindigiana*; **Dauphin 2005** as *Isotachis lindigiana*); Poás Volcano, Aug 1977, *Griffin et al. 97* (FLAS-019970, USJ, **Morales and Griffin 1983** as *Isotachis haematodes*; **Morales 1991** as *Isotachis haematodes*); Poás Volcano, *Griffin & Araya 67* (USJ, FLAS, **Morales 1991** as *Isotachis madida*); Poás Volcano, 31 Jul 1977, *Griffin & Araya 69* (USJ, FLAS, **Morales and Griffin 1983** as *Isotachis madida*; **Morales 1991** as *Isotachis madida*). CARTAGO: Paraíso cantón, Tapanti National Park, *Griffin & Eakin 287* (FLAS, **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Morales 163* (USJ, FLAS, **Morales 1991**); Paraíso cantón, Tapanti National Park, *Griffin et al. 163* (B-209852, **Dauphin 2005**); Paraíso cantón, Tapantí National Park, 9°43′12″N, 83°46′48″W, 7 Dec 1982, *Gómez-Pignataro 19328*, det. Dauphin Jun 2017 (MO-6230255!, **this publication**); Pococí cantón, La Georgina, *Griffin et al. 483* (FLAS, **Morales 1991** as *Isotachis madida*; **Kappelle 1996** as *Isotachis madida*). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, *Dauphin 1864* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Fila Cruces, *Dauphin 1770* (CR, **Dauphin 2005**); Coto Brus, 1,000–1,200 m, 30 Oct 1995, *Dauphin 2037* (NY, **Campos and Uribe 2012**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, *Dauphin et al. 3574* (CR!, **this publication**); Dota cantón, El Jardín, 1,510 m, *Morales 394* (FLAS, **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 1999a). CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3483* (ABSH, PMA, **Stotler et al. 1998**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 293* (PMA, **Dauphin 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

***Jensenia* Lindb., *Not. Sällsk. Fauna Fl. Fenn. Förh.* 9: 13, 1868 (Lindberg 1868).**

Jensenia difformis (Nees) Grolle, *Rev. Bryol. Lichénol.* 33(1/2): 228, 1965 (Grolle 1964d).

≡*Jungermannia difformis* Nees, *Fl. Bras. (Martius)* 1(1): 329, 1833 (Nees 1833b). Type: Brazil.

COSTA RICA. S. loc. (Váňa and Engel 2013; Váňa et al. 2014c). CARTAGO: Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 24 Jan 2000, *Holz CR 00-224* (CR, GOET,

Holz et al. 2001; **Dauphin 2005**). HEREDIA: San Rafael cantón, Río Las Vueltas, 10°05′N, 84°04′W, 2,040–2,700 m, *Stevens 13958*, det. Whittemore (CR, **Dauphin 2005**).

Also reported from Australia, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Jensenia spinosa (Lindenb. et Gottsche) Grolle, *Acta Bot. Fenn.* 133: 65, 1986 (Grolle and Piippo 1986).

≡*Symphyogyna spinosa* Lindenb. et Gottsche, *Syn. Hepat.* 5: 786, 1847 (Gottsche et al. 1847). Type: Mauritius, *Bory s.n.*

=*Mittenia erythropus* Gottsche, *Ann. Sci. Nat., Bot.*, ser. 5, 1: 178, 1864 (Gottsche 1864), syn. fide Schuette and Stotler (2005). Type: Colombia.

≡*Jensenia erythropus* (Gottsche) Grolle, *Rev. Bryol. Lichénol.* 33(1/2): 228, 1964 (Grolle 1964d).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Jensenia erythropus*; **Holz and Gradstein 2005b** as *Jensenia erythropus*); S. loc. (Gradstein 1999a as *Jensenia erythropus*; Gradstein et al. 2001b as *Jensenia erythropus*; Gradstein and Costa 2003 as *Jensenia erythropus*; Dauphin 2005 as *Jensenia erythropus*; Gradstein and Holz 2005 as *Jensenia erythropus*; Schuette and Stotler 2005; Santos 2008). ALAJUELA: Poás National Park, 2,650 m, *Gradstein 9625* (**Gradstein et al. 1994** as *Jensenia erythropus*; **Dauphin 2005** as *Jensenia erythropus*). CARTAGO: Páramo Buenavista, *Dauphin 1692* (CR, **Dauphin 2005** as *Jensenia erythropus*). LIMÓN: Talamanca cantón, Parque Internacional La Amistad Atlántico, Valle del Silencio, *Quesada 1516* (CR, **Dauphin 2005** as *Jensenia erythropus*); Talamanca cantón, Quebrada Kuisa, *Bittner 1842* (CR, **Dauphin 2005** as *Jensenia erythropus*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9726* (USJ, **Gradstein et al. 1994** as *Jensenia erythropus*); Pérez Zeledón cantón, Páramo Buenavista, 3,200 m, *Gradstein 9729* (USJ, **Gradstein et al. 1994** as *Jensenia erythropus*; **Dauphin 2005** as *Jensenia erythropus*); Pérez Zeledón cantón, Páramo Buenavista, *Schäfer-Verwimp 156* (CR, **Dauphin 2005** as *Jensenia erythropus*).

PANAMA. S. loc. (Gradstein 1999a as *Jensenia erythropus*; Schuette and Stotler 2005). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1572*, *1781* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Jensenia erythropus*; **Dauphin 2007** as *Jensenia erythropus*).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

Jensenia wallisii (J.B.Jack et Steph.) Grolle, *Rev. Bryol. Lichénol.* 33(1/2): 228, 1964 (Grolle 1964d).

=*Pallavicinia wallisii* J.B.Jack et Steph., *Hedwigia* 31(1): 23, 1892 (Jack and Stephani 1892). Type: Colombia.

COSTA RICA. S. loc. (Schuette and Stotler 2005; Schäfer-Verwimp and Van Melick 2016). ALAJUELA: Poás Volcano, 1940, *Haupt* (**Haupt 1942** as *Pallavicinia wallisii*; **Morales and Griffin 1983** as *Pallavicinia wallisii*).

?PANAMA. S. loc. (Schuette and Stotler 2005; Schäfer-Verwimp and Van Melick 2016). Note: We are not aware of any firsthand report from Panama.

Also reported from the Caribbean, Northern South America, Western South America, Brazil(?).

***Jubula* Dumort., *Commentat. Bot.* (*Dumortier*): 112, 1822 (Dumortier 1822).**

Jubula hutchinsiae (Hook.) Dumort. subsp. ***bogotensis*** (Steph.) Verd., *Ann. Cryptog. Exot.* 1(2): 215, 1928 (Verdoorn 1928).

≡*Jubula bogotensis* Steph., *Sp. Hepat. (Stephani)* 4: 687, 1911 (Stephani 1911b). Type: Colombia.

≡*Jubula pennsylvanica* subsp. *bogotensis* (Steph.) W.R.Guerke, *Bryophyt. Biblioth.* 17: 83, 1978 (Guerke 1978).

=*Jubula hutchinsiae* var. *costaricensis* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 128, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Guerke (1978). Original material: Costa Rica, Cartago, La Carpintera, *Standley 35674 p.p.* (JE-04010824 https://je.jacq.org/JE04010824, US-04544769 http://n2t.net/ark:/65665/305f56692-050d-4ed4-a7d0-0502815b0baf).

≡*Jubula costaricensis* Herzog ex W.R.Guerke, *Bryophyt. Biblioth.* 17: 84, 1978 (Guerke 1978), nom. inval. (ICN2018 Art. 36.1(b); publ. in syn.).

GUATEMALA. S. loc. (Schäfer-Verwimp 2014). ALTA VERAPAZ: Cobán municipio, Sierra Yalijux, 2,300 m, 1992, *Lenz GUA 1/4*, det. Eggers (**Eggers et al. 2004** as *Jubula pennsylvanica* subsp. *bogotensis*; **Freire 2006** as *Jubula pennsylvanica* subsp. *bogotensis*); S. loc., *Lenz 1922* (GUA, Pérez 2009 as *Jubula pennsylvanica* subsp. *bogotensis*).

COSTA RICA. Cordillera de Talamanca, *Kappelle 3355* (U, **Kappelle 1996** as *Jubula bogotensis*); S. loc. (Bonner 1966 also as *Jubula bogotensis*; Fulford and Sharp 1990 as *Jubula pennsylvanica* subsp. *bogotensis*; Schuster 1992a as *Jubula pennsylvanica* subsp. *bogotensis*; Gradstein et al. 2001b as *Jubula bogotensis*; Linares and Uribe 2002 as *Jubula bogotensis*; Eggers et al. 2004; Schäfer-Verwimp 2014). CARTAGO: Alvarado cantón, Coliblanco, *Maxon 235* (NY, **Guerke 1978** as *Jubula pennsylvanica* subsp. *bogotensis*); Jiménez cantón, Peijivalle, 900 m, *Standley 47017* (**Herzog 1951** as *Jubula hutchinsiae* var. *costaricensis*; **Morales 1991**; **Dauphin 2005**); Jiménez cantón, Peijivalle, 900 m, 1926, *Standley & Valerio 47017* (**Verdoorn 1928**); Jimenéz cantón, Pejibaye, *Standley 49219*, *49678* (B, FH, JE, M, US, **Guerke 1978** as *Jubula pennsylvanica* subsp. *bogotensis*); Jiménez cantón, Pejibaye, 900 m, Feb 1926, *Standley & Valerio 46997* (M, **Verdoorn 1928** as *Jubula pennsylvanica* subsp. *bogotensis*; **Crandall-Stotler and Guerke 1980** as *Jubula pennsylvanica* subsp. *bogotensis*); La Union cantón, Carpintera, 1,500 m, *Standley 35674 p.p.* (JE, US, **Herzog 1951** as *Jubula hutchinsiae* var. *costaricensis*; **Guerke 1978** as *Jubula pennsylvanica* subsp. *bogotensis*; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Cordillera de Talamanca, Chirripó National Park, Camino de los Indios, Atlantic slope, 9°30′N, 83°30′W, 2,200 m,

12 Mar 1989, *Kappelle CR5469 R80*, det. G. Dauphin Sep 2020 (CR!, **this publication**). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, Feb 1926, *Standley & Valerio 49219*, *49678* (**Verdoorn 1928**; **Herzog 1951** as *Jubula hutchinsiae* var. *costaricensis*; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Jubula bogotensis*); Monteverde cantón, Monteverde Forest Reserve, 10°15′N, 84°45′W, 5 Aug 1993, *Timme 11397*, det. Atwood 2016 (MO-6690110!, **this publication**); S. loc. (**Merwin et al. 2001** as *Jubula bogotensis*); S. loc., *Gradstein 9449* (GOET, **Pätsch et al. 2010**; **Konstantinova and Vilnet 2011**; **Larraín et al. 2015**). SAN JOSÉ: Moravia cantón, La Hondura, *Standley 37803* (FH, JE, **Guerke 1978** as *Jubula pennsylvanica* subsp. *bogotensis*; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,500 m, Mar 1924, *Standley 37503* (**Verdoorn 1928**).

PANAMA. VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34308* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America.

Kurzia G.Martens, *Flora* 53(27): 417, 1870 (von Martens 1870).

Kurzia brasiliensis (Steph.) Grolle, *Rev. Bryol. Lichénol.* 32(3/4): 174, 1963 (Grolle 1963b).

≡*Psiloclada brasiliensis* Steph., *Sp. Hepat. (Stephani)* 3: 550, 1909 (Stephani 1909b). Type: Brazil.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Kurzia capillaris (Sw.) Grolle, *Rev. Bryol. Lichénol.* 32(3/4): 173, 1964 (Grolle 1963b) subsp. ***capillaris*** var. ***capillaris***.

≡*Jungermannia capillaris* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

≡*Microlepidozia capillaris* (Sw.) Fulford, *Brittonia* 14(1): 122, 1962 (Fulford 1962).

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Schuster 2000c). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 261*, *439* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ZACAPA: S. loc., *Steyermark 43304* (F, Pérez 2009); Sierra de Las Minas, *Steyermark 29965* (F, **Fulford 1966** as *Microlepidozia capillaris*; **Freire 2006**; **Pérez 2009**).

BELIZE. CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,098 m, 8 Dec 1993, *Allen 15248* (BRH, MO-3981781, **Whittemore and Allen 1996**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38–39′N, 86°51–52′W, 1,400 m, 20 Apr 1996, *Allen 17386*, det. Dauphin et al. 2017 (MO-6230320! http://tropicos.org/specimen/100366549, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). CARTAGO: Orosí cantón, Cerro de La Muerte, La Georgina, 3,000 m, *Gradstein 9718a* (**Gradstein et al. 1994**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,550 m, *Gradstein & Solano 9571*, *9573 p.p.* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); S. loc. (**Merwin et al. 2001**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 5499 p.p.* (PMA, **Stotler et al. 1998**). DARIÉN: Pinogana distrito, 1.5 mi (2.4 km) along trail to Boca de Cupé from Cana, *Allen 8946* (MO, **Stotler et al. 1998**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 254* (PMA, **Dauphin 2007**). PANAMA: Panamá distrito, Cerro Jefe, behind INTEL tower, *Valdespino & Aranda 222a* (PMA, **Stotler et al. 1998**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 30 m, *Dauphin 1059*, det. G. Dauphin Mar 2021 (USJ-47192!, CR-4468304!, W! https://w.jacq.org/W0207443, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 30 m, 15 Feb 1994, *Dauphin 1059* (USJ, **Dauphin 1995**, **1999**, **2005**).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Subantarctic Islands(?).

Kurzia capillaris subsp. ***capillaris*** var. ***verrucosa*** (Steph.) Pócs, *Proc. Third Meeting Bryol. C. & E. Europe*: 111, 1984 (Pócs 1984a).

≡*Lepidozia verrucosa* Steph., *Hedwigia* 24(4): 167, 1885 (Stephani 1885a). Type: Brazil.

≡*Microlepidozia verrucosa* (Steph.) Fulford, *Los Angeles County Mus. Contr. Sci.* 26: 2, 1958 (Fulford 1958).

≡*Kurzia verrucosa* (Steph.) Grolle, *Rev. Bryol. Lichénol.* 32(3/4): 173, 1963 (Grolle 1963b).

GUATEMALA. S. loc. (Fulford 1967 as *Microlepidozia verrucosa*, 1987 as *Kurzia verrucosa*; Bizot and Pócs 1974 as *Kurzia verrucosa*; Oliveira-e-Silva and Yano 2000; Schuster 2000c as *Kurzia verrucosa*). EL PROGRESO: Volcán Santa Luisa, 2,400–3,333 m, *Steyermark 43527 p.p.* (F, **Fulford 1966** as *Microlepidozia verrucosa*; **Freire 2006** as *Kurzia verrucosa*). ZACAPA:

S. loc., *Steyermark 43304* (F, **Fulford 1966** as *Microlepidozia verrucosa*; **Freire 2006** as *Kurzia verrucosa*).

***HONDURAS.** *COMAYAGUA: El Plan to Cerro El Maneadero, ~11 km E of Lake Yojoa, 12 Mar 1993, *Allen 13950*, det. Dauphin Jun 2017 (MO-4462844! https://tropicos.org/specimen/90056123, **this publication**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, from Rio Cusuco to summit of Cerro Jilinco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 20 Mar 1993, *Allen 14292*, det. Dauphin Jun 2017 (MO-4464598! http://tropicos.org/specimen/90056125, **this publication**). *LEMPIRA: Gracias municipio, Montaña de Celaque, trail to filo overlooking waterfall of Rio Arquecal, 14°33′N, 88°40′W, 16 May 1992, *Allen 12188*, det. Whittemore 1992 (MO-3965010!, **this publication**). *OCOTEPEQUE: La Labor municipio, Montana del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 24 Mar 1993, *Allen 12186*, det. Dauphin Jun 2017 (MO-3968254!, **this publication**).

Also reported from West-Central Tropical Africa, East Tropical Africa, Southern Africa, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Kurzia flagellifera (Steph.) Grolle, *J. Jap. Bot.* 39(3): 80, 1964 (Grolle 1964f).

≡*Lepidozia flagellifera* Steph., *Sp. Hepat. (Stephani)* 3: 571, 1909 (Stephani 1909b). Type: Venezuela.

≡*Microlepidozia flagellifera* (Steph.) Fulford, *Brittonia* 14(1): 122, 1962 (Fulford 1962).

GUATEMALA. S. loc. (Schuster 2000c; Schäfer-Verwimp et al. 2013). EL PROGRESO: Above Volcán Santa Luisa, *Steyermark 43531* (F, **Fulford 1966** as *Microlepidozia flagellifera*; **Freire 2006**; **Pérez 2009**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18830*, det. Whittemore 1997 (MO-4417205!, **this publication**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir, 15°37′N, 86°53′W, 23 Apr 1996, 2,435 m, *Allen 17572 p.p.*, det. Dauphin May 2017 (MO-6699946! http://tropicos.org/specimen/100988155, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Schäfer-Verwimp et al. 2013; Pócs et al. 2022). ALAJUELA: Poás National Park, 2,650 m, *Gradstein 9654* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest, 3 Nov 2010, *Norris 17165* (UC, **Norris et al. 2017**). CARTAGO: El Guarco cantón, Cordillera de Talamanca, Pan-American Highway km 70, Entrada 'Mirador de Quetzales,' S of road, 2,650 m, 19 Jan 2000, *Holz CR 00-132*, det. J. Váňa (GOET, EGR, MO-5282879, Pócs 2012). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Robles, 2,000–2,650 m, *Schäfer-Verwimp 74769* (CR, **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Northern South America, Western South America, Brazil.

Kymatocalyx Herzog, *Memoranda Soc. Fauna Fl. Fennica* 25: 56, 1950 (Herzog 1950a).

Kymatocalyx dominicensis (Spruce) Váňa, Österr. *Bot. Z.* 118(5): 575, 1970 (Váňa 1970).

≡*Jungermannia dominicensis* Spruce, *J. Linn. Soc., Bot.* 30(210): 363, 1895 (Gepp 1895). Type: Dominica.

COSTA RICA. S. loc. (Dauphin 2005). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, Río Savegre Valley, 2,000 m, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0018* (CR, PRC, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**).

Also reported from East Tropical Africa, Western Indian Ocean, the Caribbean, Northern South America, Western South America, Brazil.

Kymatocalyx rhizomaticus (Herzog) Gradst. et Váňa, *Haussknechtia, Beih.* 9: 166, 1999 (Gradstein and Váňa 1999).

≡*Stenorrhipis rhizomatica* Herzog, *Trans. Brit. Bryol. Soc.* 1(4): 290, 1950 (Herzog 1950b). Type: Sarawak.

COSTA RICA. S. loc. (Gradstein et al. 2001b; Holz et al. 2001). ALAJUELA: San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Dauphin 2932* (NY, **Dauphin 2005**). HEREDIA: Sarapiquí cantón, Horquetas, Río Villalobos, near Hotel Rara Avis, 10°17′00″N, 84°02′00″W, 600 m, *Dauphin & Vargas 2203*, det. S. R. Gradstein (CR, GOET, EGR, **Dauphin et al. 1998** as *Stenorrhipis* sp.; **Dauphin 2005**); Sarapiqui cantón, llanura de Santa Clara, along Camino Corduroy near Rio Villalobos and Hotel Rara Avis, 600 m, 29 Jan 1996, *Dauphin 2203* (EGR, GOET, CR, MO, USJ, **Gradstein and** Váňa **1999** as *Kymatocalyx* '*rhizomatica*').

PANAMA. S. loc. (Gradstein et al. 2001b; Gradstein and Benitez 2017; Gradstein 2021). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, 1993, *Gradstein & Salazar Allen 15088* (PMA, GOET, PRC, **Gradstein and** Váňa **1999**; **Dauphin et al. 2006, 2022**). PANAMA: Capira distrito, Parque Nacional Altos de Campana, 600–750 m, *Salazar Allen et al. 20971* (PMA, **Dauphin et al. 2006**); Panamá distrito, Cerro Azul, Sendero el Cantar, 300 m, 20 Mar 1996, *Dauphin 96-35*, *Gradstein 9785* (EGR, GOET, PMA, **Gradstein and** Váňa **1999**; **Dauphin et al. 2006**).

COCOS I. Cascada Río Genio, 130 m, 15 Feb 1994, *Dauphin 1024*, det. S. R. Gradstein (USJ, U, **Dauphin 1995** as *Stenorrhipis* sp., **1999** as *Stenorrhipis* sp., **2005**; Dauphin et al. 1998 as *Stenorrhipis* sp., with a question mark; **Gradstein and** Váňa **1999**).

Also reported from Western Indian Ocean, Malesia, Northern South America, Western South America.

Leiomitra Lindb., *Acta Soc. Sci. Fenn.* 10: 515, 1875 (Lindberg 1875).

Leiomitra argentea (Herzog) T.Katag., *J. Bryol.* 37(4): 304, 2015 (Katagiri 2015).

≡*Trichocolea argentea* Herzog, *Arch. Bot. São Paulo* 1(2): 40, 1925 (Herzog 1925a). Type: Brazil.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/12/4* (**Winkler 1967** as *Trichocolea argentea*).

Also reported from the Caribbean, Brazil.

Leiomitra brevifissa (Steph.) T.Katag., *Hattoria* 10: 40, 2019 (Katagiri 2019).

≡*Trichocolea brevifissa* Steph., *Sp. Hepat. (Stephani)* 4: 54, 1909 (Stephani 1909b). Type: Brazil.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 275*, *276*, *475* (USCG, **Freire et al. 2013** as *Trichocolea brevifissa*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Trichocolea brevifissa*).

Also reported from Mexico, the Caribbean, Northern South America, Brazil.

Leiomitra elliottii (Steph.) R.M.Schust., *Nova Hedwigia* 73(3/4): 469, 2001 (Schuster 2001a).

≡*Trichocolea elliottii* Steph., *Sp. Hepat. (Stephani)* 4: 55, 1909 (Stephani 1909a). Type: Dominica.

BELIZE. TOLEDO: S. loc., Dec 1993, *Allen 15330* (BRH, MO, **Whittemore and Allen 1996** as *Trichocolea elliottii*).

COSTA RICA. ALAJUELA: San Ramón cantón, La Balsa, 10°11′N, 84°30′W, *Stevens 14259*, det. Whittemore (CR!, **Dauphin 2005** as *Trichocolea elliottii*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Eakin 265*, det. D. A. Breil (FLAS, **Morales 1991** as *Trichocolea elliottii*; **Dauphin 2005** as *Trichocolea elliottii*); Paraíso cantón, Orosi, Tapantí National Park, *Morales 1807*, *1818* (USJ, **Morales 1991** as *Trichocolea elliottii*; **Dauphin 2005** as *Trichocolea elliottii*). GUANACASTE: Bagaces cantón, Volcán Tenorio, *Morales 1858*, *1860* (**Dauphin 2005** as *Trichocolea elliottii*); Tenorio Volcano, *Garcia & Morales 1858*, *1860* (USJ, **Morales 1991** as *Trichocolea elliottii*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 1,050–1,150 m, *Morales 1606*, *1927* (USJ, **Morales 1991** as *Trichocolea elliottii*; **Dauphin 2005** as *Trichocolea elliottii*).

PANAMA. Near El Llano, *Kennedy et al. 3125* (MO, **Stotler et al. 1998** as *Trichocolea elliottii*). CHIRIQUÍ: Boquete distrito, Cerro Respingo, *Gentry 5917* (MO, PMA, **Stotler et al. 1998** as *Trichocolea elliottii*). NASO TJËR DI COMARCA: Fábrega Massif, *Gómez-Pignataro et al. 22515* (MO, **Stotler et al. 1998** as *Trichocolea elliottii*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Southern South America.

Leiomitra flaccida Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 349, 1885 (Spruce 1885). Type: Ecuador.

≡*Trichocolea flaccida* (Spruce) Spruce, *Rev. Bryol.* 15(3): 34, 1888 (Spruce 1888).

=*Trichocolea patula* Steph., *Sp. Hepat. (Stephani)* 4: 57, 1909 (Stephani 1909a), syn. fide Hatcher (1957). Type: Venezuela.

=*Trichocolea inaequalis* Steph., *Sp. Hepat. (Stephani)* 4: 59, 1909 (Stephani 1909a), syn. fide Hatcher (1957). Lectotype (Söderström et al. 2023a: 156) if not holotype: Guatemala, s. coll., s.n. (G-00113470).

GUATEMALA. S. loc. (G, **TYPE** of *Trichocolea inaequalis*, Stephani 1909a as *Trichocolea inaequalis*; **Fulford 1963a** as *Trichocolea flaccida*, 1987 as *Trichocolea flaccida*; Fulford et al. 1970 as *Trichocolea flaccida*; Fulford and Sharp 1990 as *Trichocolea flaccida*; Oliveira-e-Silva and Yano 2000 as *Trichocolea flaccida*; **Katagiri 2019**). ALTA VERAPAZ: Cobán, 1,650 m, Jun 1908, *Türckheim* (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, NY, **Hatcher 1957** as *Trichocolea flaccida*); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 375* (USCG, Pérez 2009 as *Trichocolea flaccida*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Trichocolea flaccida*). BAJA VERAPAZ: Finca Bucaral, *Sharp 2765* (TENN, **Fulford 1963a** as *Trichocolea flaccida*; **Freire 2006** as *Trichocolea flaccida*; **Pérez 2009** as *Trichocolea flaccida*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 158*, *302*, *383*, *445* (USCG, **Freire et al. 2013** as *Trichocolea flaccida*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Trichocolea flaccida*). EL PROGRESO: Finca Bucaral, *Sharp 2734* (TENN, **Fulford 1963a** as *Trichocolea flaccida*; **Freire 2006** as *Trichocolea flaccida*; **Pérez 2009** as *Trichocolea flaccida*). QUICHÉ: Nebaj, *Sharp 2511a* (TENN, **Fulford 1963a** as *Trichocolea flaccida*; **Freire 2006** as *Trichocolea flaccida*; **Pérez 2009** as *Trichocolea flaccida*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/7/1/a* (**Winkler 1967** as *Trichocolea flaccida*).

COSTA RICA. S. loc. (Fulford 1963a, 1987 both as *Trichocolea flaccida*; Cole 1982, 1983 both as *Trichocolea flaccida*; Fulford and Sharp 1990 as *Trichocolea flaccida*). ALAJUELA: Poás Volcano, *Morales 1784* (**Morales 1991** as *Trichocolea flaccida*; **Dauphin 2005** as *Trichocolea flaccida*); San Ramón cantón, La Balsa, 10°11′N, 84°30′W, *Liesner et al. 14842*, det. Whittemore (CR, **Dauphin 2005** as *Trichocolea flaccida*); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Trichocolea flaccida*). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, *Standley 35155* (B, **Dauphin 2005** as *Trichocolea flaccida*). PUNTARENAS: Coto Brus cantón, Santa María de Pittier, *Dauphin 1392* (CR, **Dauphin 2005** as *Trichocolea flaccida*); Monteverde, <1,500 m (Morales 1991 as *Trichocolea flaccida*; Dauphin 2005 as *Trichocolea flaccida*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Trichocolea flaccida*); Monteverde, 4,300 ft

(1,310 m), Feb 1969, *James, W. 1969-01* (R, **Reed and Robinson 1971** as *Trichocolea flaccida*); S. loc. (**Merwin et al. 2001** as *Trichocolea flaccida*). SAN JOSÉ: Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36320* (**Herzog 1938** as *Trichocolea patula*; **Hatcher 1957** as *Trichocolea flaccida*; **Morales 1991** as *Trichocolea flaccida*; **Dauphin 2005** as *Trichocolea flaccida*); Moravia cantón, La Palma, *Maxon* (**Hatcher 1957** as *Trichocolea flaccida*; **Morales 1991** as *Trichocolea flaccida*; **Dauphin 2005** as *Trichocolea flaccida*); Vásquez de Coronado cantón, Las Nubes, ~1,600 m, *Standley 33066*, *33068*, *33099*, *36068*, *38184* (**Herzog 1938** as *Trichocolea patula*; **Hatcher 1957** as *Trichocolea flaccida*; **Morales 1991** as *Trichocolea flaccida*; **Dauphin 2005** as *Trichocolea flaccida*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,950 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31009* (JE, **Schäfer-Verwimp 2014** as *Trichocolea flaccida*); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000–1,270 m, *Salazar Allen et al. 693*, *705* (PMA, **Stotler et al. 1998** as *Trichocolea flaccida*); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34547* (JE, **Schäfer-Verwimp 2014** as *Trichocolea flaccida*). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30763*, *30785/A*, *34181*, *34209* (JE, **Schäfer-Verwimp 2014** as *Trichocolea flaccida*). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998 as *Trichocolea flaccida*); Panamá distrito, Cerro Jefe, forest behind the INTEL tower, 900–1,000 m, *Salazar Allen 5210*, *5241* (PMA, **Stotler et al. 1998** as *Trichocolea flaccida*); Panamá distrito, Cerro Jefe, forest behind the INTEL tower, 900–1,000 m, *Spörle* (PMA, **Spörle 1990** as *Trichocolea flaccida*; **Stotler et al. 1998** as *Trichocolea flaccida*); S. loc. (Schäfer-Verwimp 2014 as *Trichocolea flaccida*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Leiomitra paraphyllina Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 350, 1885 (Spruce 1885). Type: Ecuador.

≡*Trichocolea paraphyllina* (Spruce) Steph., *Sp. Hepat. (Stephani)* 4: 58, 1909 (Stephani 1909a).

GUATEMALA. S. loc. (Fulford 1987 as *Trichocolea paraphyllina*; Fulford and Sharp 1990 as *Trichocolea paraphyllina*). QUETZALTENANGO: San Martín Sacatepéquez municipio, Quebrada El Pocito, *Standley 85063* (F, **Fulford 1963a** as *Trichocolea paraphyllina*; **Freire 2006** as *Trichocolea paraphyllina*; **Pérez 2009** as *Trichocolea paraphyllina*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Trichocolea paraphyllina*; Fulford 1987 as *Trichocolea paraphyllina*; Fulford and Sharp 1990 as *Trichocolea paraphyllina*); S. loc., *Brenes 20504* (F, **Fulford 1963a** as *Trichocolea paraphyllina*; **Dauphin 2005** as *Trichocolea paraphyllina*). CARTAGO: Paraíso cantón, Orosi, Tapantí, *Griffin & Morales 157* (USJ, FLAS, **Morales 1991** as *Trichocolea paraphyllina*; **Dauphin 2005** as *Trichocolea paraphyllina*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1564*, *1755*, *1767*, *1934*, *1947* (USJ, **Morales 1991** as *Trichocolea paraphyllina*; **Dauphin 2005** as *Trichocolea paraphyllina*). SAN JOSÉ: Braulio Carrillo National Park, *Morales* (USJ, **Morales 1991** as *Trichocolea paraphyllina*; **Dauphin 2005** as *Trichocolea paraphyllina*); Pérez Zeledón cantón, Chirripó National Park, Río Talari, *Kuhbier 564*, det. Grolle (B, **Dauphin 2005** as *Trichocolea paraphyllina*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34591* (JE, **Schäfer-Verwimp 2014** as *Trichocolea paraphyllina*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Leiomitra sprucei (Steph.) T.Katag., *Hattoria* 10: 43, 2019 (Katagiri 2019).

≡*Trichocolea sprucei* Steph., *Sp. Hepat. (Stephani)* 4: 59, 1909 (Stephani 1909a). Type: Dominica.

=*Trichocolea floccosa* Herzog et Hatcher, *Lloydia* 20(3): 148, 1958 (Hatcher 1957). Holotype: Costa Rica, Cartago: Santa Clara, *Maxon & Harvey* 8194 (JE-04004894 https://je.jacq.org/JE04004894; isotype B-300004804 https://herbarium.bgbm.org/object/B300004804).

?GUATEMALA. S. loc. (Winkler 1967 as *Trichocolea floccosa*; Fulford and Sharp 1990 as *Trichocolea floccosa*). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Trichocolea floccosa*; Holz 2006 as *Trichocolea floccosa*); S. loc. (Cole 1982, 1983, both as *Trichocolea floccosa*; **Fulford and Sharp 1990** as *Trichocolea floccosa*; Schuster 2000c as *Trichocolea floccosa*; Schäfer-Verwimp et al. 2013 as *Trichocolea floccosa*; Schäfer-Verwimp 2014 as *Trichocolea floccosa*; Schäfer-Verwimp and Van Melick 2016 as *Trichocolea floccosa*; Lavocat Bernard 2018 as *Trichocolea floccosa*). ALAJUELA: Poás Volcano, *Morales & Lacayo 544* (**Morales 1991** as *Trichocolea floccosa*; **Dauphin 2005** as *Trichocolea floccosa*); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Trichocolea sprucei*); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Norris 110113* (UC-2053684, **Norris et al. 2017** as *Trichocolea floccosa*). CARTAGO: El Guarco cantón, Santa Clara, 1,950 m, 20 Jul 1923, *Maxon 8194* (JE-04004894, B-04804, **Hatcher 1957** as *Trichocolea floccosa*; **Fulford 1963a** as *Trichocolea floccosa*; **Geissler and Bischler 1990** as *Trichocolea floccosa*; **Morales 1991** as *Trichocolea floccosa*; **Dauphin 2005** as *Trichocolea floccosa*; **Katagiri 2019**); Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Eakin 290*, det. D. A. Breil (FLAS, **Morales 1991** as *Trichocolea sprucei*; **Dauphin 2005** as *Trichocolea sprucei*); Paraíso cantón, Orosi, Tapantí

National Park, *Morales 1817* (USJ, **Morales 1991** as *Trichocolea floccosa*; **Dauphin 2005** as *Trichocolea floccosa*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Trichocolea floccosa*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Trichocolea floccosa*); Dota cantón, San Gerardo (Dauphin 2005 as *Trichocolea floccosa*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Trichocolea floccosa*); Dota cantón, Santa María, *Schäfer-Verwimp 86* (CR, **Dauphin 2005** as *Trichocolea floccosa*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Trichocolea floccosa*); Moravia cantón, Camino a La Hondura, *Griffin & Morales A10*, *Griffin et al. 378* (FLAS, **Morales 1991** as *Trichocolea floccosa*; **Dauphin 2005** as *Trichocolea floccosa*).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016 as *Trichocolea floccosa*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34427*, *34504* (JE, **Schäfer-Verwimp 2014** as *Trichocolea floccosa*). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34193* (JE, **Schäfer-Verwimp 2014** as *Trichocolea floccosa*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Leiomitra tomentosa (Sw.) Lindb., *Acta Soc. Sci. Fenn.* 10: 515, 1875 (Lindberg 1875).

≡*Jungermannia tomentosa* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

≡*Trichocolea tomentosa* (Sw.) Gottsche, *Mexik. Leverm.*: 119, 1863 (Gottsche 1863).

=*Trichocolea cristacastrensis* Steph., *Sp. Hepat. (Stephani)* 4: 59, 1909 (Stephani 1909a), syn. fide Hatcher (1957). Type: Peru.

GUATEMALA. S. loc. (Fulford 1987 as *Trichocolea tomentosa*; Fulford and Sharp 1990 as *Trichocolea tomentosa*; Freire et al. 2012 as *Trichocolea tomentosa*). ALTA VERAPAZ: S. loc. (**Hatcher 1957** as *Trichocolea tomentosa*); Cobán municipio, near Cubilguitz, *Steyermark 44482* (F, **Freire 2006** as *Trichocolea tomentosa*); Cobán, *Türckheim 5810* (G, **Fulford 1963a** as *Trichocolea tomentosa*; **Freire 2006** as *Trichocolea mexicana*; **Pérez 2009** as *Trichocolea tomentosa*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Trichocolea tomentosa*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Trichocolea tomentosa*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 119*, *405*, *461*, *496* (USCG, **Freire et al. 2013** as *Trichocolea tomentosa*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Trichocolea tomentosa*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Trichocolea tomentosa*); Volcán Santa Luisa, *Steyermark 43528 p.p.* (F, **Fulford 1963a** as *Trichocolea tomentosa*; **Freire 2006** as *Trichocolea tomentosa*; **Pérez 2009** as *Trichocolea tomentosa*). HUEHUETENANGO: S. loc., *Pérez 1425* (USCG, Pérez 2009 as *Trichocolea tomentosa*); Cerro Huetz, *Steyermark 47415* (F, **Fulford 1963a** as *Trichocolea tomentosa*; **Freire 2006** as *Trichocolea tomentosa*). QUETZALTENANGO: Zunil municipio, Fuentes Georginas, 2,300–2,500 m, *Standley 85862*, *86002* (F, **Fulford 1963a** as *Trichocolea tomentosa*; **Freire 2006** as *Trichocolea tomentosa*; **Pérez 2009** as *Trichocolea tomentosa*). QUICHÉ: S. loc., *Pérez 2323* (USCG, Pérez 2009 as *Trichocolea tomentosa*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Trichocolea tomentosa*).

?HONDURAS. S. loc. (Fulford 1987 as *Trichocolea tomentosa*). Note: We are not aware of any firsthand report from Honduras.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Trichocolea tomentosa*); Cordillera de Talamanca, *Kappelle 3368* (U, **Kappelle 1996** as *Trichocolea tomentosa*); S. loc. (Fulford 1963a as *Trichocolea tomentosa*; Cole 1983 as *Trichocolea tomentosa*; Fulford 1987 as *Trichocolea tomentosa*; Fulford and Sharp 1990 as *Trichocolea tomentosa*; Gradstein 1999a as *Trichocolea tomentosa*; Dauphin 2005 as *Trichocolea tomentosa*; Gradstein and Holz 2005 as *Trichocolea tomentosa*); S. loc., *Brenes 19136* (hb. Fulford, **Fulford 1963a** as *Trichocolea tomentosa*; **Morales 1991** as *Trichocolea tomentosa*). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Trichocolea tomentosa*); Poás Volcano, *Griffin et al. 22*, *26*, *37*, *76*, *545* (FLAS, USJ, **Dauphin 2005** as *Trichocolea tomentosa*); Poás Volcano, *Morales & Canessa 416*, *434* (**Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Trichocolea tomentosa*). CARTAGO: S. loc. (**Hatcher 1957** as *Trichocolea tomentosa*); El Guarco cantón, Santa Clara, *Torres 213 p.p.* (F, **Fulford 1963a** as *Trichocolea tomentosa*; **Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*); Turrialba cantón, Volcán Turrialba, 1,500–1,900 m, *Standley 37565*, *38728* (**Herzog 1938** as *Trichocolea tomentosa*; **Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*); Turrialba cantón, Volcán Turrialba, S slope near the Finca, *Standley 35155* (B, **Herzog 1938** as *Trichocolea tomentosa*; **Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*). *GUANACASTE: Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, *Chavez 379a*, det. Dauphin May 2017 (MO-5280473!, **this publication**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva (Dauphin 2005 as *Trichocolea tomentosa*); Barva

cantón, Volcán Barva, *Griffin et al. D163*, *Morales 1484*, *1539*, *1599*, *1942*, *Pittier 6045* (**Morales 1991** as *Trichocolea tomentosa*); Sarapiquí cantón, Rara Avis, *Dauphin 2193* (CR, **Dauphin 2005** as *Trichocolea tomentosa*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Trichocolea tomentosa*); Buenos Aires cantón, Reserva Dúrika, *Quesada 1207* (CR, **Dauphin 2005** as *Trichocolea tomentosa*); Coto Brus cantón, Fila Cruces, Laguna Gamboa, 8°57′00′N, 83°04′20′W, *Dauphin 1718* (CR, **Dauphin 2005** as *Trichocolea tomentosa*); Monteverde, <1,500 m (Dauphin 2005 as *Trichocolea tomentosa*); Monteverde cantón, along South Line, 16 Mar 1969, *James, W. 1969-109* (R, **Reed and Robinson 1971** as *Trichocolea tomentosa*); Monteverde cantón, Checo Trail near Adono clearing, 3 Aug 1968, *James, W.* (US, R, **Reed and Robinson 1971** as *Trichocolea tomentosa*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Trichocolea tomentosa*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Trichocolea tomentosa*). SAN JOSÉ: Aserrí cantón, El Tablazo (Dauphin 2005 as *Trichocolea tomentosa*); Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942** as *Trichocolea cristacastrensis*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Trichocolea tomentosa*); Dota cantón, 9 mi (14 km) SW of El Empalme, *Woodruff* (FLAS, **Morales 1991** as *Trichocolea tomentosa*); Dota cantón, El Empalme, 9 mi SO, R. Woodruff s.n., San Gerardo (Dauphin 2005 as *Trichocolea tomentosa*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Trichocolea tomentosa*); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998** as *Trichocolea tomentosa*); Moravia cantón, La Palma, *Griffin & Morales A10b*, *A39*, *A41* (FLAS, USJ, **Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*); Moravia cantón, La Palma, *Horich*, det. Robinson (MO-6168712!, **this publication**); Moravia cantón, La Palma, *Maxon* (NY, **Fulford 1963a** as *Trichocolea tomentosa*; **Morales 1991** as *Trichocolea tomentosa*; **Dauphin 2005** as *Trichocolea tomentosa*); Moravia cantón, La Palma, 1,500–1,900 m, *Standley 37565* (**Herzog 1938** as *Trichocolea tomentosa*); Pérez Zeledón cantón, Chirripó National Park, upper Río Talari Valley, *Kuhbier 563*, det. Grolle (B-225755, **Dauphin 2005** as *Trichocolea tomentosa*); Pérez Zeledón cantón, Rivas, *Quesada 1344* (CR, **Dauphin 2005** as *Trichocolea tomentosa*).

PANAMA. S. loc. (Fulford 1987 as *Trichocolea tomentosa*; Fulford and Sharp 1990 as *Trichocolea tomentosa*; Gradstein 1999a as *Trichocolea tomentosa*). CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Trichocolea tomentosa*); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.41* (PMA, **Spörle 1990** as *Trichocolea tomentosa*; **Stotler et al. 1998** as *Trichocolea tomentosa*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen & Béliz 1381* (PMA, **Stotler et al. 1998** as *Trichocolea tomentosa*); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 665*, *717 p.p.*, *824 p.p.* (PMA, **Sierra et al. 2019a** as *Trichocolea tomentosa*). DARIÉN: Cerro Pirre, 1,300 m, *Salazar Allen & Gradstein 9308*, *9309*, *9310* (PMA, **Stotler et al. 1998** as *Trichocolea tomentosa*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Trichocolea tomentosa*). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1549* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Trichocolea tomentosa*; **Dauphin 2007** as *Trichocolea tomentosa*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

***Lejeunea* Lib., *Ann. Gen. Sci. Phys.* 6: 373, 1820 (Libert 1820).**

Lejeunea acanthogona Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 177, 1884 (Spruce 1884) var. ***acanthogona***. Type: Ecuador.

=*Crossotolejeunea cristatella* Gottsche ex Steph., *Sp. Hepat. (Stephani)* 5: 238, 1913 (Stephani 1913), syn. fide Reiner-Drehwald and Goda (2000). Type: Venezuela.

≡*Lejeunea cristatella* (Gottsche ex Steph.) Bern.-Lück., nom. inval. (ICN2018 Art. 41.5; basionym not cited). Note: The record of *Lejeunea cristatella* by Lücking (1995) is erroneous. The specimen belongs to *Lejeunea intricata* (Reiner-Drehwald and Goda 2000).

COSTA RICA. S. loc. (Eggers et al. 2004 as *Lejeunea cristatella*; Schäfer-Verwimp et al. 2013, rejecting earlier reports; Gradstein 2021). SAN JOSÉ: Dota cantón, San Gerardo, 2,950 m, 9 Nov 1999, *Holz CR 99-548* (GOET, **Dauphin 2005**); Dota cantón, San Gerardo, 1,950 m, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0039/A* (CR, hb. Schäfer-Verwimp, **Dauphin 2005**).

?PANAMA. S. loc. (Gradstein 2021). Note: We are not aware of any firsthand report from Panama.

Also reported from Mexico, Northern South America, Western South America, Brazil.

Lejeunea acanthogona* var. *cristulata (Steph.) Gradst. et C.J.Bastos, *Phytotaxa* 453(2): 61, 2020 (Bastos and Gradstein 2020a).

≡*Crossotolejeunea cristulata* Steph., *Hedwigia* 35(3): 75, 1896 (Stephani 1896). Type: Brazil.

=*Crossotolejeunea cristuliflora* Steph., *Sp. Hepat. (Stephani)* 5: 231, 1913 (Stephani 1913), syn. fide Bastos and Gradstein (2020a). Type: Brazil.

≡*Lejeunea cristuliflora* (Steph.) M.E.Reiner et Goda, *J. Hattori Bot. Lab.* 89: 19, 2000 (Reiner-Drehwald and Goda 2000).

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Lejeunea* cf. '*cristulaeflora*'). Note: We are not aware of any positively identified specimen from Alta Verapaz. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Lejeunea cristulata*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Lejeunea cristuliflora*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,360–1,500 m, *Schäfer-Verwimp & Verwimp 34351/B*, *34389/B* (JE, **Schäfer-Verwimp 2014** as *Lejeunea cristuliflora*).

Also reported from Northern South America, Western South America, Brazil.

Lejeunea adpressa Nees, *Repert. Pharm.* 76: 45, 1842 (von Flotow et al. 1842). Type: Brazil.

=*Lejeunea magnoliae* Lindenb. et Gottsche, *Syn. Hepat.* 5: 763, 1847 (Gottsche et al. 1847), syn. fide Reiner-Drehwald (2009). Type: Mexico.

=*Lejeunea drymophila* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 285, 1884 (Spruce 1884), syn. fide Reiner-Drehwald (2009). Type: Peru.

=*Lejeunea caespitosa* auct. amer., non typus (sensu Schuster 1980d; cf. Reiner-Drehwald 2009).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53244 p.p.*, *54841*, *55347*, *etc.* (FH, JE, US, **Herzog 1951** as *Lejeunea drymophila*).

COSTA RICA. CARTAGO: Jiménez cantón, Rio Naranjo, *Tonduz* (G-11832, JE, **Reiner-Drehwald 2009**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34516/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, 16 Mar 1996, *Reiner-Drehwald 96006* (PMA, **Reiner-Drehwald 2009**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34734/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 665*, *667*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Darién. PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, Sendero de Interpretación, 8°40′N, 79°55′W, 850 m, *Salazar Allen 10815* (U, PMA, **Reiner-Drehwald 2009**); La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013); La Chorrera distrito, Barro Colorado Island, 9°10′N, 79°50′W, Mar 1987, *Salazar Allen & Chung 4678* (PMA, **Reiner-Drehwald 2009**); La Chorrera distrito, Barro Colorado Island, Shannon 4, 9°09′N, 79°51′W, 20–170 m, *Dauphin & Moser 3127*, det. M. E. Reiner-Drehwald (PMA, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=27952&Z_CHK=2385, **Dauphin et al. 2006** as *Lejeunea magnoliae*); La Chorrera distrito, Barro Colorado Island, Shannon 4, 9°09′N, 79°51′W, 2003, *Dauphin & Moser 3128* (CR, PMA, **Dauphin et al. 2022**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 20 Mar 1996, *Reiner-Drehwald 960122* (GOET, **Reiner-Drehwald 2009**). VERAGUAS: Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34330/B* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30834* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea angusta (Lehm. et Lindenb.) Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 469, 1842 (Montagne 1842b).

≡*Jungermannia angusta* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 52, 1832 (Lehmann 1832). Type: Brazil.

?GUATEMALA. ?EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, Morales 2011 as *Lejeunea* cf. *angusta*). Note: We are not aware of any firsthand report from Guatemala.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**).

Also reported from Australia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea anomala Lindenb. et Gottsche, *Linnaea* 24(6): 636, 1852 (Lindenberg and Gottsche 1851). Type: Surinam.

≡*Ceratolejeunea anomala* (Lindenb. et Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 396, 1913 (Stephani 1913).

≡*Euosmolejeunea anomala* (Lindenb. et Gottsche) Zwickel, *Ann. Bryol.* 6: 112, 1933 (Zwickel 1933).

=*Lejeunea matteola* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 240, 1884 (Spruce 1884), syn. fide Reiner-Drehwald (1999). Type: Brazil.

≡*Hygrolejeunea matteola* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 537, 1914 (Stephani 1914).

=*Taxilejeunea carinata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 157, 1951 (Herzog 1951), syn. fide Dauphin (2005). Lectotype (Söderström and Hentschel 2023: 24): Costa Rica, Guanacaste, Tilarán, Quebrada Serena, *Standley 46256a* (JE-04002599 https://je.jacq.org/JE04002599, isolectotype B-300026137 https://herbarium.bgbm.org/object/B300026137).

COSTA RICA. GUANACASTE: Tilarán cantón, Quebrada Serena, 700 m, *Standley 46256a* (B-26137, JE-04002599, **TYPE** of *Taxilejeunea carinata*, **Herzog 1951** as *Taxilejeunea carinata*; **Geissler and Bischler 1990** as *Taxilejeunea carinata*; **Morales 1991** as *Taxilejeunea carinata*; **Dauphin 2005**); Tilarán cantón, Santa Elena Biological Preserve, 4 Aug 1993, *Timme 11332*, det. Dauphin Jun 2017 (MO-6690011!, **this publication**). LIMÓN:

Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-80*, *92-81*, *92-82* (hb. Lücking, **Lücking 1995** as *Taxilejeunea carinata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Taxilejeunea carinata*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea aphanes Spruce, *J. Bot.* 19: 36, 1881 (Spruce 1881). Type: Venezuela.

=*Lejeunea filipes* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 275, 1884 (Spruce 1884), syn. fide Schäfer-Verwimp and Reiner-Drehwald (2009). Type: Peru.

=*Lejeunea autoica* R.M.Schust., *J. Hattori Bot. Lab.* 25: 6, 1962 (Schuster 1962), syn. fide Reiner-Drehwald (2000a). Type: USA.

COSTA RICA. S. loc. (Schäfer-Verwimp 1999 as *Lejeunea filipes*). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**). CARTAGO: Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Lejeunea filipes*). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Lejeunea filipes*). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Lejeunea filipes*); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001** as *Lejeunea filipes*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Lejeunea filipes*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-480* (**Dauphin et al. 1998** as *Lejeunea autoica*; **Dauphin 2005** as *Lejeunea filipes*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-149*, *92-362*, *92-363*, *92-410*, *92-442*, *92-480*, *92-536*, *92-541* (hb. Lücking, **Lücking 1995** as *Lejeunea autoica*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea autoica*). PUNTARENAS: S. loc. (Merwin et al. 2001 as *Lejeunea* aff. *filipes*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Lejeunea filipes*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, Gradstein et al. 2001a as *Lejeunea* aff. *filipes*).

PANAMA. CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30931* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, surroundings of Finca La Suiza, 8°39′N, 82°12′W, 1,630 m, *Schäfer-Verwimp & Verwimp 34490/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020** as *Lejeunea filipes*). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 663*, *664*, *etc.* (PMA, **Sierra et al. 2019a**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Middle Atlantic Ocean, Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea asperrima Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 160, 1884 (Spruce 1884). Type: Brazil.

≡*Echinocolea asperrima* (Spruce) R.M.Schust., *Beih. Nova Hedwigia* 9: 125, 1963 (Schuster 1963b).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Echinocolea asperrima*; Holz 2006 as *Echinocolea asperrima*). *ALAJUELA: Río Cuarto cantón, Laguna Hule, 12 Jan 1996, *Dauphin & Gonzáles 2114*, det. Dauphin 2020 (CR-150917!, **this publication**). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Echinocolea asperrima*).

PANAMA. S. loc. (Ilkiu-Borges 2005); S. loc., *Schäfer-Verwimp & Verwimp 30817* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**; **Zhu and Shu 2018**; **Zhu et al. 2018b**). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño & Salazar Allen 3362*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Hornito, Chiriquí River, 1,000 m, *Salazar Allen et al. 577* (PMA, **Stotler et al. 1998** as *Echinocolea asperrima*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34418/D*, *34422* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30789* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34196*, *34198/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 673*, *693* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998 as *Echinocolea asperrima*); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Echinocolea asperrima*); Cerro Pirre, station at foothills of Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9213 p.p.* (PMA, **Stotler et al. 1998** as *Echinocolea asperrima*). VERAGUAS: Santa Fe distrito,

trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30817*, *30826*, *30899/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea asthenica Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 222, 1884 (Spruce 1884). Syntypes: Venezuela, Peru.

≡*Taxilejeunea asthenica* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 483, 1914 (Stephani 1914).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 175* (USCG, Pérez 2009 as *Taxilejeunea asthenica*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Taxilejeunea* cf. *asthenica*).

Also reported from Northern South America, Western South America, Brazil.

Lejeunea bermudiana (A.Evans) R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 1105, 1980 (Schuster 1980d).

≡*Crossotolejeunea bermudiana* A.Evans, *Bull. Torrey Bot. Club* 33(3): 132, 1906 (Evans 1906a). Type: Bermuda.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Lejeunea* cf. *bermudiana*). Note: We are not aware of any positively identified specimen from Guatemala.

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,700 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30961/B* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,550 m, *Schäfer-Verwimp & Verwimp 34452* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea bombonasensis Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 222, 1884 (Spruce 1884). Type: Ecuador.

=*Lejeunea lusoria* auct.

≡*Omphalanthus lusorius* auct.

≡*Taxilejeunea lusoria* auct. Note: Reports of *Lejeunea lusoria* (or any combination of it), except the type, belong to *Lejeunea bombonasensis* (cf. Bastos and Gradstein 2020a).

HONDURAS. S. loc. (Winkler 1967 as *Taxilejeunea lusoria*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54430 p.p.*, *55537* (**Herzog 1951** as *Taxilejeunea lusoria*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/10*, *A/8/1* (**Winkler 1967** as *Taxilejeunea lusoria*).

?PANAMA. ?CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (Salazar Allen et al. 2021 as *Lejeunea* cf. *lusoria*). Note: We are not aware of any positively identified specimen from Panama.

Also reported from Northern South America, Western South America, Brazil.

Lejeunea cancellata Nees et Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 472, 1842 (Montagne 1842b). Type: Cuba.

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, Los Planes, 2,030 m, 12 Nov 2014, *Búcaro H318*, det. Dauphin 2016 (MHES!, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016); S. loc., *Schäfer-Verwimp & Holz SV/H-0507/C* (GOET, **Heinrichs et al. 2013**). CARTAGO: Paraíso cantón, Orosi, *Schäfer-Verwimp & Holz SV/H-0374/A* (GOET, **Lüth and Schäfer-Verwimp 2004**; **Dauphin 2005**; **Heinrichs et al. 2013**). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 1,950 m, 25 Dec 1999, *Holz & Schäfer-Verwimp SV/ H-75/B* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**); Dota cantón, San Gerardo, Río Savegre, *Schäfer-Verwimp & Holz SV/H-0075b* (**Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Schäfer-Verwimp & Holz* (**Dauphin 2005**); Pérez Zeledón cantón, Cordillera de Talamanca, valley of the Rio Chirripó Pacifico above San Gerardo de Rivas, 1,600 m, 27 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0235/B* (CR, **Lüth and Schäfer-Verwimp 2004**); Pérez Zeledón cantón, Rivas, *Schäfer-Verwimp & Holz SV/H-0235b* (**Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016); S. loc., *Schäfer-Verwimp & Verwimp 30850* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**). CHIRIQUÍ: Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34706* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Sereno at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34634/A*, *34636* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15090* (**Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34285* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30850* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, the Caribbean, Northern South America(?), Western South America, Brazil, Southern South America.

Lejeunea capensis Gottsche, *Syn. Hepat.* 3: 374, 1845 (Gottsche et al. 1845a). Type: South Africa.

=*Lejeunea caespitosa* Lindenb., *Syn. Hepat.*: 382, 1845 (Gottsche et al. 1845a), syn. fide Reiner-Drehwald and Schäfer-Verwimp (2008). Type: South Africa. Note: *Lejeunea caespitosa* sensu Schuster (1980d) is *Lejeunea adpressa*.

=*Lejeunea halei* H.Rob., *Bryologist* 67(4): 454, 1964 (Robinson 1964), syn. fide Reiner-Drehwald and Schäfer-Verwimp (2008). Type: Mexico.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Lejeunea* cf. *capensis*). Note: We are not aware of any positively identified specimen from Alta Verapaz. EL PETÉN: San José municipio, Cerro Cahuí, *Can et al.* (USCG, **Morales 2011** as *Lejeunea caespitosa*); San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011** as *Lejeunea caespitosa*).

COSTA RICA. S. loc. (Ilkiu-Borges 2000 as *Lejeunea caespitosa*; Bastos 2004 as *Lejeunea caespitosa*); Cordillera de Talamanca (Holz 2003 as *Lejeunea halei*; **Holz and Gradstein 2005b** as *Lejeunea halei*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-501* (**Dauphin 2005** as *Lejeunea caespitosa*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-131*, *92-91*, *92-92*, *92-94*, *92-350*, *92-401*, *92-501* (hb. Lücking, **Lücking 1995** as *Lejeunea caespitosa*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea caespitosa*). PUNTARENAS: S. loc. (Merwin et al. 2001 as *Lejeunea* cf. *caespitosa*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Lejeunea caespitosa*); Monteverde (**Dauphin 2005** as *Lejeunea caespitosa*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, Sillett et al. 1995 as *Lejeunea* cf. *caespitosa*). SAN JOSÉ: Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Lejeunea halei*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,300 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30882/B* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30962* (JE, **Schäfer-Verwimp 2014**).

Also reported from Macaronesia, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Arabian Peninsula, Indian Subcontinent, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea caracensis Lindenb., *Syn. Hepat.* 3: 355, 1845 (Gottsche et al. 1845a). Type: Venezuela.

≡*Taxilejeunea caracensis* (Lindenb.) Schiffn., *Bot. Jahrb. Syst.* 23: 582, 1897 (Schiffner 1897).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Taxilejeunea caracensis*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler C/1* (**Winkler 1967** as *Taxilejeunea caracensis*).

COSTA RICA. S. loc. (Winkler 1967 as *Taxilejeunea caracensis*; Fulford and Sharp 1990 as *Taxilejeunea caracensis*). CARTAGO: Paraíso cantón, Orosi, *Standley 39627* (**Herzog 1951** as *Taxilejeunea caracensis*; **Morales 1991** as *Taxilejeunea caracensis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America(?), Brazil.

Lejeunea catinulifera Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 233, 1884 (Spruce 1884). Type: Ecuador.

=*Lejeunea patellifera* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 234, 1884 (Spruce 1884), syn. fide Reiner-Drehwald (2005c). Type: Ecuador.

≡*Amphilejeunea patellifera* (Spruce) R.M.Schust., *Nova Hedwigia* 44: 8, 1987 (Schuster 1987).

COSTA RICA. S. loc. (Gradstein 1999a as *Amphilejeunea patellifera*; Gradstein and Holz 2005 as *Amphilejeunea patellifera*; Schäfer-Verwimp and Pócs 2009); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Amphilejeunea patellifera*; Holz 2006 as *Amphilejeunea patellifera*). CARTAGO: Cerro de La Muerte, *Holz CR 99-660* (GOET, **Reiner-Drehwald 2005c**); El Guarco cantón, 3 de Junio, 2600, *Gradstein & Morales 9391* (GOET, U, USJ, **Gradstein et al. 1994** as *Amphilejeunea patellifera*; **Kappelle 1996** as *Amphilejeunea patellifera*; **Dauphin 2005** as *Amphilejeunea patellifera*; **Reiner-Drehwald 2005c**). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Amphilejeunea patellifera*); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998** as *Amphilejeunea patellifera*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Amphilejeunea patellifera*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9738*, *9743* (U, USJ, **Gradstein et al. 1994** as *Amphilejeunea patellifera*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea cerina (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 391, 1845 (Gottsche et al. 1845a).

≡*Jungermannia cerina* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 16, 1833 (Lehmann 1833). Type: Brazil.

≡*Hygrolejeunea cerina* (Lehm. et Lindenb.) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

≡*Macrolejeunea cerina* (Lehm. et Lindenb.) Gradst., *Bryologist* 92(3): 345, 1989 (Gradstein 1989).

=*Lejeunea subsimplex* Nees et Mont., *Ann. Sci. Nat., Bot.*, ser. 2, 19: 264, 1843 (Montagne 1843), syn. fide Grolle (1987). Type: Dominica.

≡*Macrolejeunea subsimplex* (Nees et Mont.) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

=*Hygrolejeunea similis* Steph., *Sp. Hepat. (Stephani)* 5: 541, 1914 (Stephani 1914), syn. fide Reiner-Drehwald et al. (2013). Lectotype (Bonner 1966: 665; see also Reiner-Drehwald et al. 2013: 425 as "holotype") or possibly holotype: Costa Rica, Buenos Aires, 1892, *Tonduz 15553* (G-00282440 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=215414&lang=en).

=*Macrolejeunea subsimplex* f. *minor* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 161, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Guanacaste, Quebrada

Serena, SE, of Tilarán, 700 m, on tree, *Standley 46256* (JE-04010825 https://je.jacq.org/JE04010825, US-04658647 http://n2t.net/ark:/65665/33920f591-1c38-4054-9cf7-8ffce0d7e93a).

=*Macrolejeunea subsimplex* f. *parvistipula* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 161, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras, Atlántida, Lancetilla Valley, near Tela, on *Cyclopeltis*, 20–600 m, *Standley 56865* (JE-04010826 https://je.jacq.org/JE04010826).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,000 m, *Pérez 328* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 21*, *72*, *95*, *113*, *157*, *166*, *233*, *286*, *384*, *408*, *427*, *489*, *513*, *532* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Macrolejeunea cerina*). HUEHUETENANGO: S. loc., *Pérez 1452* (USCG, Pérez 2009).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56865* (**Herzog 1951** as *Macrolejeunea subsimplex* f. *parvistipula*; **Geissler and Bischler 1985** as *Macrolejeunea subsimplex* f. *parvistipula*).

COSTA RICA. S. loc. (**Stephani 1914** as *Hygrolejeunea similis*; Cole 1982, 1983, both as *Hygrolejeunea cerina*); S. loc., *Schäfer-Verwimp & Holz SV/H-0471* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**). CARTAGO: La Union cantón, Cerro de La Carpintera, 1,500–1,850 m, *Standley 35674* (JE, US, **Herzog 1951** as *Macrolejeunea subsimplex*; **Morales 1991** as *Macrolejeunea cerina*; **Dauphin 2005**); Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879**). GUANACASTE: Tilarán cantón, Quebrada Serena, SE de Tilarán, 700 m, *Standley 46256* (**Herzog 1951** as *Macrolejeunea subsimplex* f. *minor*; **Geissler and Bischler 1985** as *Macrolejeunea subsimplex* f. *minor*; **Morales 1991** as *Macrolejeunea cerina*; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Zurquí, *Standley 50536* (**Morales 1991** as *Macrolejeunea cerina*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50636* (**Herzog 1951** as *Macrolejeunea subsimplex*; **Dauphin 2005**); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 49667* (**Herzog 1951** as *Macrolejeunea subsimplex*; **Morales 1991** as *Macrolejeunea cerina*; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Buenos Aires, 1892, *Tonduz 15553* (G-11817 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=215414&lang=en, **TYPE** of *Hygrolejeunea similis*, **Bonner 1966** as *Hygrolejeunea similis*; **Reiner-Drehwald et al. 2013**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde, 9 Jan 1965, *James, W. 10* (R, **Reed and Robinson 1971** as *Hygrolejeunea cerina*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,880 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30990* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30926* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34456/A* (JE, **Schäfer-Verwimp 2014**); COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34201* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998 as *Macrolejeunea cerina*); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9283 p.p.* (PMA, **Stotler et al. 1998** as *Macrolejeunea cerina*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Macrolejeunea cerina*). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34310/A*, *34319/B* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Clark 1953a as *Macrolejeunea subsimplex*; Fosberg and Klawe 1966 as *Macrolejeunea subsimplex*; Morales 1991 as *Macrolejeunea subsimplex*; Dauphin 1995 as *Macrolejeunea subsimplex*, 1999 as *Macrolejeunea cerina*, 2005); S. loc., *Snodgrass & Heller* (**Robinson 1902** as *Macrolejeunea subsimplex*; **Fosberg and Klawe 1966** as *Macrolejeunea subsimplex*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Macrolejeunea subsimplex*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea cladogyna A.Evans, *Amer. J. Bot.* 5(3): 134, 1918 (Evans 1918). Type: Florida.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 233*, *382* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Lejeunea* aff. *cladogyna*). Note: We are not aware of any positively identified specimen from Zacapa.

PANAMA. DARIÉN: Around INRENARE's station, foothills of Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9222b* (PMA, **Stotler et al. 1998**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

COCOS I. S. loc. (Fosberg and Klawe 1966; Dauphin 1995, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Chatham Bay, 28 Jun 1932, *Howell 233* (CAS, **Clark 1953a**); Wafer Bay, 28 Jun 1932, *Howell 231 p.p.* (CAS, **Clark 1953a**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea controversa Gottsche, *Hepat. Eur., Leberm.* 56–57: no. 556, 1873 (Gottsche and Rabenhorst 1873). Type: Guadeloupe.

=*Crossotolejeunea lindeniana* Steph., *Sp. Hepat. (Stephani)* 5: 232, 1913 (Stephani 1913), syn. fide Reiner-Drehwald and Goda (2000). Lectotype (Bonner 1963b: 901; see also Reiner-Drehwald and Goda 2000: 15 as "holotype") or possibly holotype: America Centralis, s.d., *Goebel s.n.* (G-00282358 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=213738&lang=en).

=*Crossotolejeunea lindeniana* var. *connivens* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 141, 1951 (Herzog 1951), syn. fide Reiner-Drehwald and Goda (2000). Lectotype (Reiner-Drehwald and Goda 2000: 15 as "holotype"): Costa Rica, Heredia, C. de Las Caricias, N of San Isidro, *Standley & Valerio 52294* (JE-04002113 https://je.jacq.org/JE04002113, isolectotypes JE-04002112 https://je.jacq.org/JE04002112, US-00070849 http://n2t.net/ark:/65665/329a7ae97-31a4-4cf1-916e-800406f8cf12).

=*Crossotolejeunea obtusiuscula* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 142, 1951 (Herzog 1951), syn. fide Reiner-Drehwald and Goda (2000). Lectotype (Reiner-Drehwald and Goda 2000: 15 as "holotype") or possibly holotype: Costa Rica, Cartago: Vicinity of Pejivalle, *Standley 47128/b* (JE-04002106 https://je.jacq.org/JE04002106).

COSTA RICA. S. loc. (Bastos 2004; Schäfer-Verwimp and Reiner-Drehwald 2009; Mello et al. 2011; Schäfer-Verwimp 2014). CARTAGO: Jiménez cantón, Peijivalle, ~900 m, *Standley 47128b* (**Herzog 1951** as *Crossotolejeunea obtusiuscula*; **Bonner 1963b** as *Crossotolejeunea obtusiuscula*; **Morales 1991** as *Crossotolejeunea obtusiuscula*; **Reiner-Drehwald and Goda 2000**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Caricias, *Standley & Valerio 52294* (JE, **Reiner-Drehwald and Goda 2000**); San Isidro cantón, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, *Standley 52294* (**Herzog 1951** as *Crossotolejeunea lindeniana* var. *connivens*; **Bonner 1963b** as *Crossotolejeunea lindeniana* var. *connivens*; **Morales 1991** as *Crossotolejeunea lindeniana*; **Dauphin 2005**); Sarapiqui cantón, llanura de Santa Clara, finca Rara Avis, *Dauphin 2188* (GOET, **Reiner-Drehwald and Goda 2000**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 18 Mar 1992, *Lyon 313*, det. Dauphin Jun 2017 (MO-4411686!, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, *Gradstein 9439*, *9541* (GOET, **Reiner-Drehwald and Goda 2000**; **Dauphin 2005**); Monteverde, *Ingram & Ferrell-Ingram 1762* (GOET, **Dauphin 2005**).

PANAMA. *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4631*, *4637*, det. Dauphin Aug 2017 (PMA, **this publication**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34198/A* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15077* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3081* (CR, PMA, Dauphin et al. 2022 as *Lejeunea* cf. *controversa*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea corynantha Spruce, *J. Linn. Soc., Bot.* 30(210): 344, 1895 (Gepp 1895). Type: Dominica.

PANAMA. S. loc. (Lavocat Bernard et al. 2009; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Reiner-Drehwald 2009; Gradstein and Benitez 2017; Gradstein et al. 2018b; Lavocat Bernard 2018; Gradstein 2021). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 1,000 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34247/A*, *34259/C* (JE, **Schäfer-Verwimp 2014**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, 9°10′N, 79°20′W, 1,000 m, Jun 1991, *Salazar Allen & Gradstein 9396* (U, **Reiner-Drehwald and Schäfer-Verwimp 2008**).

Also reported from the Caribbean, Western South America.

Lejeunea cyathophora Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 359, 1851 (Mitten 1851). Type: Ecuador.

EL SALVADOR. SAN VICENTE: La Cumbre, *Winkler C/1* (**Winkler 1967**). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/16/2*, *A/26/5* (**Winkler 1967**).

COSTA RICA. S. loc. (Robinson 1964; Winkler 1967; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014; **Churchill et al. 2015**; Gradstein 2021). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, 600 m, Dec 1999, *Schäfer-Verwimp & Holz SV/H-0373/B* (CR, JE, **Reiner-Drehwald and Schäfer-Verwimp 2008**). SAN JOSÉ: Dota cantón, Santa María, *Standley 42541a* (US, **Herzog 1951**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**); Pérez Zeledón cantón, Cordillera de Talamanca, San Gerardo de Rivas, 1,450 m, Dec 1999, *Schäfer-Verwimp & Holz SV/H-0229B* (CR, JE, **Reiner-Drehwald and Schäfer-Verwimp 2008**); Pérez Zeledón cantón, Rivas, San Gerardo, 1,450 m, Dec 1999, *Holz & Schäfer-Verwimp CR 99-1265* (GOET, **Reiner-Drehwald and Schäfer-Verwimp 2008**).

PANAMA. S. loc. (Gradstein 2021). CHIRIQUÍ: Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34617/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Lejeunea debilis (Lehm. et Lindenb.) Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 60, 1836 (Nees and Montagne 1836).

≡*Jungermannia debilis* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 51, 1832 (Lehmann 1832). Type: St. Vincent.

≡*Taxilejeunea debilis* (Lehm. et Lindenb.) Steph., *Hedwigia* 29(3): 141, 1890 (Stephani 1890a).

=*Taxilejeunea bidentula* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 155, 1951 (Herzog 1951), syn. fide Herzog (1951), nom. inval. (ICN2018 Art. 36.1(b); publ. in syn. [sub *Taxilejeunea debilis*]).

GUATEMALA. S. loc. (Fulford 1987 as *Taxilejeunea debilis*; Fulford and Sharp 1990 as *Taxilejeunea debilis*; Lücking 1995 as *Taxilejeunea debilis*). ALTA VERAPAZ: Cobán municipio, Cubelquitz, 1906, *Türckheim 5104* (G, **Evans 1921b** as *Taxilejeunea debilis*); Senahú municipio, Finca Sepacuité, 1902, *Cook & Griggs 75*, *443* (**Evans 1921b** as *Taxilejeunea debilis*); trail between Sepacuité and Pangós, 1905, *Maxon & Hay 3112* (**Evans 1921b** as *Taxilejeunea debilis*).

HONDURAS. S. loc. (Fulford and Sharp 1990 as *Taxilejeunea debilis*; **Geissler and Bischler 1990** as *Taxilejeunea bidentula*; Lücking 1995 as *Taxilejeunea debilis*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56851* (**Herzog 1951** as *Taxilejeunea debilis*).

NICARAGUA. S. loc. (Fulford 1987 as *Taxilejeunea debilis*; Lücking 1995 as *Taxilejeunea debilis*). GRANADA: Granada municipio, Volcán Mombacho, 1903, *Baker 2505 p.p.* (**Evans 1921b** as *Taxilejeunea debilis*).

COSTA RICA. S. loc. (Fulford 1987 as *Taxilejeunea debilis*; Fulford and Sharp 1990 as *Taxilejeunea debilis*; Geissler and Bischler 1990 as *Taxilejeunea bidentula*); S. loc., *Biasi et al. 21* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**). CARTAGO: Paraíso cantón, Orosi, *Standley 39618* (B-26102, **Herzog 1951** as *Taxilejeunea debilis*; **Morales 1991** as *Taxilejeunea debilis*; **Dauphin 2005** as *Taxilejeunea debilis*). GUANACASTE: Tilarán cantón, El Silencio, ~750 m, *Standley 44646a* (**Herzog 1951** as *Taxilejeunea debilis*; **Morales 1991** as *Taxilejeunea debilis*; **Dauphin 2005** as *Taxilejeunea debilis*); Tilarán cantón, Los Ayotes, 600–700 m, *Standley 45459 p.p.* (**Herzog 1951** as *Taxilejeunea debilis*; **Morales 1991** as *Taxilejeunea debilis*; **Dauphin 2005** as *Taxilejeunea debilis*). HEREDIA: La Esmeralda (Dauphin 2005 as *Taxilejeunea debilis*); La Esmeralda, Macizo del Barva, 600–750 m, *Biolley 15628* (NY, **Evans 1921b** as *Taxilejeunea debilis*; **Morales 1991** as *Taxilejeunea debilis*; **Dauphin 2005** as *Taxilejeunea debilis*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-62*, Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-63*, *92-76*, *92-251*, *92-337*, *92-601*, *94-20* (hb. Lücking, **Lücking 1995** as *Taxilejeunea debilis*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Taxilejeunea debilis*). PUNTARENAS: S. loc., *Schluder 7* (GOET, **Heinrichs et al. 2013**); Coto Brus cantón, Cerro Paraguas, 10 Jun 1995, *Dauphin 1793* (GOET, CR under *Taxilejeunea pterogonia*, **Heinrichs et al. 2013**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Taxilejeunea debilis*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, Wanek and Pörtl 2008 as *Taxilejeunea* cf. *debilis*); Golfo Dulce (Umana and Wanek 2010 as *Taxilejeunea* cf. *debilis*).

PANAMA. CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Boquete, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Taxilejeunea debilis*; **Stotler et al. 1998** as *Taxilejeunea debilis*). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34142* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34302* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30857* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 1025*, det. G. Dauphin Jan 2021 (USJ-47213!, CR-4468403!, W-0207445! https://w.jacq.org/W0207445, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil(?).

Lejeunea deplanata Nees, *Syn. Hepat.* 3: 368, 1845 (Gottsche et al. 1845a) var. ***deplanata***. Type: Peru.

=*Rectolejeunea maxonii* A.Evans, *Bull. Torrey Bot. Club* 39(12): 609, 1912 (Evans 1912c), syn. fide Reiner-Drehwald (2010b). Type: Jamaica.

≡*Lejeunea maxonii* (A.Evans) Xiao L.He, *Ann. Bot. Fennici* 34(1): 71, 1997 (He 1997).

COSTA RICA. S. loc. (Cole, 1983 as *Rectolejeunea maxonii*; Qiu et al. 2014). PUNTARENAS: Coto Brus cantón, Las Cruces, ~4 km SSE of San Vito, 1,300 m, Dec 1978, *Sipman 11915* (U, **Reiner-Drehwald 2010b**); Monteverde (Morales 1991 as *Rectolejeunea maxonii*); Monteverde, 15 Jan 1965, *James, W. 41a*, *41b*, *41e* (R, **Reed and Robinson 1971** as *Rectolejeunea maxonii*; **Dauphin 2005** as *Lejeunea maxonii*). SAN JOSÉ: Dota cantón, San Gerardo, 1,900 m, Dec 1999, *Schäfer-Verwimp & Holz SV/H-0125/C* (CR, hb. Schäfer-Verwimp, **Reiner-Drehwald 2010b**).

PANAMA. S. loc. (Qiu et al. 2014); Canal Zone (Schäfer-Verwimp 2014). †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This must refer to the recently separated Naso Tjër Di comarca. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,110 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30871* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30965* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34509/B* (JE, **Schäfer-Verwimp 2014**); Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34687/A* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre

(Stotler et al. 1998 as *Lejeunea maxonii*); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9295* (PMA, **Stotler et al. 1998** as *Lejeunea maxonii*); Cerro Pirre, 800 m, *Salazar Allen & Gradstein 9299 p.p.* (PMA, **Stotler et al. 1998** as *Lejeunea maxonii*). NASO TJËR DI COMARCA: Cerro Fábrega, 3,000 m, Mar 2004, *De Gracia et al. 322* (PMA, **Reiner-Drehwald 2010b**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013 as *Lejeunea maxonii*); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15120* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Drayton 15, *Salazar Allen & Chung 4656* (PMA, **Stotler et al. 1998** as *Lejeunea maxonii*; **Dauphin et al. 2022**).

Also reported from North-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea flaccida Lindenb. et Gottsche, *Syn. Hepat. 5*: 758, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Omphalanthus lusorius* Lindenb. et Gottsche, *Syn. Hepat. 5*: 747, 1847 (Gottsche et al. 1847), syn. fide Bastos and Gradstein (2020a). Type: Colombia. Note: *Omphalanthus lusoria* is nomenclaturally a synonym of *Lejeunea flaccida* (only the type belongs there), but what used to be called *Omphalanthus lusoria* (or any combination of it) belongs to *Lejeunea bombonasensis* (cf. Bastos and Gradstein 2020a).

≡*Lejeunea lusoria* (Lindenb. et Gottsche) Prantl., *Hedwigia* 29: xvi, 1890 (Prantl 1890).

≡*Taxilejeunea lusoria* (Lindenb. et Gottsche) Steph., *Hedwigia* 29(3): 141, 1890 (Stephani 1890a).

=*Lejeunea obtusangula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 221, 1884 (Spruce 1884), syn. fide Bastos and Gradstein (2020a). Type: Brazil.

≡*Taxilejeunea obtusangula* (Spruce) A.Evans, *Bull. Torrey Bot. Club* 38(5): 215, 1911 (Evans 1911a).

=*Taxilejeunea standleyi* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 156, 1951 (Herzog 1951), syn. with *Taxilejeunea obtusangula* fide Dauphin (2005). Lectotype (Söderström and Hentschel 2023: 24): Costa Rica, San José, La Hondura, *Standley 51875c* (JE-04002531 https://je.jacq.org/JE04002531, US-00072925 http://n2t.net/ark:/65665/3d9d27f53-2c66-4886-91d4-9debd576afe0, B-300026211 https://herbarium.bgbm.org/object/B300026211).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 246* (USCG, Pérez 2009 as *Taxilejeunea obtusangula*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Taxilejeunea obtusangula*).

HONDURAS. S. loc. (Winkler 1967 as *Taxilejeunea lusoria*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54430 p.p.*, *55537* (**Herzog 1951** as *Taxilejeunea lusoria*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/10*, *A/8/1* (**Winkler 1967** as *Taxilejeunea lusoria*).

COSTA RICA. S. loc. (Robinson 1964 as *Taxilejeunea standleyi*; Cole 1982, 1983, both as *Taxilejeunea obtusangula*; **Fulford and Sharp 1990** as *Taxilejeunea standleyi*; Schäfer-Verwimp and Pócs 2009 as *Taxilejeunea obtusangula*; Schäfer-Verwimp 2014 as *Lejeunea obtusangula*; Lavocat Bernard 2018 as *Lejeunea obtusangula*). PUNTARENAS: Monteverde, 15 Jan 1965, *James, W. 40g*, *41a* (R, **Reed and Robinson 1971** as *Taxilejeunea obtusangula*). SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51875c* (B-26211, **Herzog 1951** as *Taxilejeunea standleyi*; **Geissler and Bischler 1990** as *Taxilejeunea standleyi*; **Morales 1991** as *Taxilejeunea standleyi*; **Dauphin 2005** as *Taxilejeunea obtusangula*).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Taxilejeunea obtusangula*; Lavocat Bernard 2018 as *Lejeunea obtusangula*); Canal Zone (Schäfer-Verwimp 2014 as *Lejeunea obtusangula*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (Salazar Allen et al. 2021 as *Lejeunea* cf. *lusoria*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Lejeunea obtusangula*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,500–1,620 m, *Schäfer-Verwimp & Verwimp 34397*, *34399/A*, *34407/A*, *34453/A* (JE, **Schäfer-Verwimp 2014** as *Lejeunea obtusangula*); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.67′N, 82°42.85′W, 1,220 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34696/A* (JE, **Schäfer-Verwimp 2014** as *Lejeunea obtusangula*). DARIÉN: S. loc. (Schäfer-Verwimp 2014 as *Lejeunea obtusangula*); Cerro Pirre (Stotler et al. 1998 as *Taxilejeunea obtusangula*); Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9357* (PMA, **Stotler et al. 1998** as *Taxilejeunea obtusangula*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Taxilejeunea obtusangula*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15077*, *15114*, *15115* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino Snider-Molino, *Salazar Allen & Chung 4732* (PMA, **Stotler et al. 1998** as *Taxilejeunea obtusangula*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Pearson, 2003, *Dauphin 3069*, *3106* (**Dauphin et al. 2022**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea flava (Sw.) Nees, *Naturgesch. Eur. Leberm.* 3: 277, 1838 (Nees 1838b) subsp. ***flava***.

≡*Jungermannia flava* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

=*Lejeunea melastomatis* Lindenb. et Gottsche, *Syn. Hepat. 5*: 763, 1847 (Gottsche et al. 1847), syn. fide Reiner-Drehwald and Grolle (2012). Type: Mexico.

≡*Cheilolejeunea melastomatis* (Lindenb. et Gottsche) Steph., *Hedwigia* 29(2): 82, 1890 (Stephani 1890c), nom. inval. (ICN2018 Art. 35.1; genus not valid).

≡*Rectolejeunea melastomatis* (Lindenb. et Gottsche) Steph., *Sp. Hepat. (Stephani) 5*: 691, 1914 (Stephani 1914).

GUATEMALA. S. loc. (Schuster 1980d; Miller et al. 1983; Fulford 1987; Fulford and Sharp 1990; Lücking 1995; Oliveira-e-Silva and Yano 2000; Srivastava and Sharma 2000; Easa 2003;

Bastos 2004; Alam and Srivastava 2009; Mello et al. 2011; Váňa and Engel 2013). ALTA VERAPAZ: S. loc., *Pérez 336* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). *QUETZALTENANGO: Zunil municipio, road from Aldea Chuimucubal, NW slopes of Pico Zunil, 14°45′56.35″N, 91°28′14.69″W, 2,300–2,600 m, 14 Jan 2006, *Quedensley 3991*, det. Dauphin Sep 2017 (MO, W-0089068!, **this publication**).

BELIZE. S. loc. (Váňa and Engel 2013). STANN CREEK: Cockscombe Reserve, 1996, *Eggers & Timm BEZ 5/27*, det. Eggers (**Eggers et al. 2004**).

HONDURAS. S. loc. (Schuster 1957, 1980d; Miller et al. 1983; Fulford 1987; Fulford and Sharp 1990; Lücking 1995, Oliveira-e-Silva and Yano 2000; Srivastava and Sharma 2000; Easa 2003; Bastos 2004; Alam and Srivastava 2009; Mello et al. 2011; Váňa and Engel 2013). ATLÁNTIDA: El Porvenir municipio, Parque Nacional Pico Bonito, desde la quebrada Zacate al límite zona núcleo punto 54, 15°40′N, 86°55′W, 200–400 m, 29 Dec 2001, *Dauphin & Ferrufino 3050.7*, det. Dauphin Dec 2020 (CR-5152106!, **this publication**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53244c*, *55346*, *55570 p.p.*, *55804*, *55805* (**Herzog 1951**).

EL SALVADOR. S. loc. (Lücking 1995). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/3*, *A/32/β/2*, *A/32/γ/6* (**Winkler 1967**).

COSTA RICA. S. loc. (Stephani 1914 as *Rectolejeunea melastomatis*; Váňa and Engel 2013); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 718a* (CR, **Kappelle 1996**). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**); Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 64967 p.p.* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Jimenéz cantón, Pejibaye (Eggers 2001). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-95*, *91-96*, *92-90*, *92-220*, *92-346*, *92-470*, *92-533* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Schuster 1957, 1980d; Miller et al. 1983; Fulford 1987; Lücking 1995; Fulford and Sharp 1990; Stotler et al. 1998; Easa 2003; Bastos 2004; Oliveira-e-Silva and Yano 2000; Srivastava and Sharma 2000; Alam and Srivastava 2009; Mello et al. 2011; Váňa and Engel 2013); S. loc., *Schäfer-Verwimp & Verwimp 30873* (GOET, **Heinrichs et al. 2013**). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31060/A* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torrijos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 674*, *691 p.p.*, *693*, *731*, *737*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9241* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: Between Arraiján and La Chorrera, *Richards 2049* (F, PMA, **Stotler et al. 1998**). PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Panama and think this refers to Panama West.

COCOS I. S. loc. (Fosberg and Klawe 1966; Dauphin 1995, 1999); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Península Presidio, 210 m, 15 Feb 1994, *Dauphin 1046*, det. M. I. Morales (USJ, **Dauphin 2005**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 500* (USJ, **Bernecker-Lücking 2000**); Wafer Bay, 28 Jun 1932, *Howell 229 p.p.* (CAS, **Clark 1953a**); Yglesias D, 350–500 m, Apr 1992, *Lücking 589* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Northern Europe, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Eastern Canada, North-Central USA, Northeastern USA(?), South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands. This is the total distribution of the species. The distribution of the subspecies is not fully known.

Lejeunea glaucescens Gottsche, *Syn. Hepat.* 3: 378, 1845 (Gottsche et al. 1845a). Type: Brazil.

=*Crossotolejeunea caulicalyx* Steph., *Sp. Hepat. (Stephani)* 5: 237, 1913 (Stephani 1913), syn. fide Bastos and Gradstein (2020a). Type: Cuba.

≡*Lejeunea caulicalyx* (Steph.) M.E.Reiner et Goda, *J. Hattori Bot. Lab.* 89: 13, 2000 (Reiner-Drehwald and Goda 2000).

GUATEMALA. S. loc. (Schäfer-Verwimp and Reiner-Drehwald 2009 as *Lejeunea caulicalyx*; Schäfer-Verwimp and Van Melick 2016 as *Lejeunea caulicalyx*; Lavocat Bernard 2018 as *Lejeunea caulicalyx*). ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Lejeunea* cf. *glaucescens*). Note: We are not aware of any positively identified specimen from Alta Verapaz. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PETÉN: San José municipio, El Zotz, *Can et al.* (USCG, Morales 2011 as *Lejeunea* cf. *glaucescens*). Note: We are not aware of any positively identified specimen from El. Petén. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 550 m, 8 Dec 1996, *Allen 18120*, det. Dauphin Jun 2017 (MO-5228028! http://tropicos.org/specimen/90102225, **this publication**).

***EL SALVADOR.** *LA LIBERTAD: Antigua municipio, vicinity of Las Cuevas Field Station, 16°44′N, 88°59′W, 22 Dec 2014, *Búcaro H289*, det. Dauphin (MHES!, **this publication**). *SANTA ANA: Metapán municipio, Montecristo, Sendero Pionero, 4 Nov 2014, *Búcaro H300*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Lejeunea caulicalyx*; Schäfer-Verwimp et al. 2013 as *Lejeunea caulicalyx*; Schäfer-Verwimp 2014 as *Lejeunea caulicalyx*; Lavocat Bernard 2018 as *Lejeunea caulicalyx*; Costa 2017 as *Lejeunea caulicalyx*; Costa et al. 2020 as *Lejeunea caulicalyx*). PUNTARENAS: Osa cantón, Los Mogos, Cerro Helado, *Gradstein & Dauphin 9357* (GOET, **Reiner-Drehwald and Goda 2000** as *Lejeunea caulicalyx*; **Dauphin 2005** as *Lejeunea caulicalyx*); Osa cantón, Rincón, *Gradstein 9304* (GOET, **Reiner-Drehwald and Goda 2000** as *Lejeunea caulicalyx*; **Dauphin 2005** as *Lejeunea caulicalyx*).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016 as *Lejeunea caulicalyx*; Lavocat Bernard 2018 as *Lejeunea caulicalyx*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (Salazar Allen et al. 2021 as *Lejeunea* cf. *glaucescens*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Lejeunea caulicalyx*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,640 m, *Schäfer-Verwimp & Verwimp 34417/C* (JE, **Schäfer-Verwimp 2014** as *Lejeunea caulicalyx*). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38′N, 80°07′W, 800–850 m, 30 Mar 2006, *Schäfer-Verwimp & Verwimp 30747*(JE, **Schäfer-Verwimp 2014** as *Lejeunea caulicalyx*); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34217* (JE, **Schäfer-Verwimp 2014** as *Lejeunea caulicalyx*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15085* (**Dauphin et al. 2022**). VERAGUAS: Isla Canales de Tierra, Sendero de los tanques de reserva de agua, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19743* (PMA, **Salazar Allen and Chung 2003, 2006**); Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34299/A* (JE, **Schäfer-Verwimp 2014** as *Lejeunea caulicalyx*).

***COCOS I.** S. loc. (Salazar Allen and Chung 2003 as *Lejeunea* cf. *glaucescens*); Península Presidio, 210 m, 15 Feb 1994, *Dauphin 1046*, det. M. I. Morales (USJ, Dauphin 1995 as *Lejeunea* cf. *glaucescens*, 1999 as *Lejeunea* cf. *glaucescens*); Valle Wafer, Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, 19 Jan 1990, *Dauphin 918*, det. G. Dauphin Oct 2020 (USJ-47190!, CR-4468167!, **this publication**); Valle Wafer, Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, 19 Jan 1990, *Dauphin 942*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Valle Wafer, Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, 20 Jan 1994, *Dauphin 942*, det. G. Dauphin Oct 2020 (CR!, **this publication**).

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea grolleana (Bernecker) R.L.Zhu et W.Ye, *J. Syst. Evol.* 51(4): 472, 2013 (Ye et al. 2013).

≡*Oryzolejeunea grolleana* Bernecker, *Haussknechtia, Beih.* 9: 37, 1999 (Bernecker-Lücking 1999). Holotype: Costa Rica, Limón, Botarrama trail in the Braulio Carrillo N.P., section Quebrada Gonzalez, 40 km NNE of San José, 10°12′00″N, 83°55′00″W, ~460–480 m, on leaves of *Rhodospatha wendlandii* Schott. ex Engl., Jan–Jul 1992, *Bernecker 92-147* (JE-04001647 https://je.jacq.org/JE04001647).

≡*Oryzolejeunea grolleana* A.Lücking, *Diversit. Mikrohab. Epiphyll. Moose*: 123, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in a thesis).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Oryzolejeunea grolleana*; Holz et al. 2001 as *Oryzolejeunea grolleana*). HEREDIA: Sarapiquí cantón, La Selva, Jun 1991, *Vargas 34948* (USJ, **Bernecker-Lücking 1999** as *Oryzolejeunea grolleana*; **Dauphin 2005** as *Oryzolejeunea grolleana*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-148* (G, hb. Bernecker, **Bernecker-Lücking 1999** as *Oryzolejeunea grolleana*; **Dauphin 2005** as *Oryzolejeunea grolleana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-147* (G, JE, hb. Lücking, **Lücking 1995** as *Oryzolejeunea grolleana*; **Bernecker-Lücking 1999** as *Oryzolejeunea grolleana*; **Dauphin 2005** as *Oryzolejeunea grolleana*; **Crosby and Engel 2006** as *Oryzolejeunea grolleana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-443* (G, hb. Lücking, **Lücking 1995** as *Oryzolejeunea grolleana*; **Bernecker-Lücking 1999** as *Oryzolejeunea grolleana*; **Dauphin 2005** as *Oryzolejeunea grolleana*); Pococí cantón, Braulio Carrillo National Park,

Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-623* (hb. Lücking, **Lücking 1995** as *Oryzolejeunea grolleana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Oryzolejeunea grolleana*).

Not found outside Central America.

Lejeunea grossitexta (Steph.) M.E.Reiner et Goda, *J. Hattori Bot. Lab.* 89: 29, 2000 (Reiner-Drehwald and Goda 2000).

≡*Crossotolejeunea grossitexta* Steph., *Sp. Hepat. (Stephani)* 5: 240, 1913 (Stephani 1913). Type: Brazil.

COSTA RICA. S. loc. (Lavocat Bernard et al. 2009; Schäfer-Verwimp and Reiner-Drehwald 2009; Schäfer-Verwimp 2014). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, Sendero La Oropéndola, 600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0358/b* (hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 31000* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31000*, *31001/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea herminieri (Steph.) R.L.Zhu, *Phytotaxa* 208(1): 99, 2015 (Pócs et al. 2015b).

≡*Archilejeunea herminieri* Steph., *Sp. Hepat. (Stephani)* 4: 714, 1911 (Stephani 1911b). Type: Guadeloupe.

=*Archilejeunea saccatiloba* Steph., *Hedwigia* 34(2): 61, 1895 (Stephani 1895a), syn. fide Gradstein (2013c). Type: Brazil.

≡*Lejeunea saccatiloba* (Steph.) R.L.Zhu et W.Ye, *J. Syst. Evol.* 51(4): 472, 2013 (Ye et al. 2013), nom. illeg. (ICN2018 Art. 53.1; hom. illeg. [non Steph. ex Anon. 1891]). Blocking name: *Lejeunea saccatiloba* (Steph.) Prantl (=*Lejeunea anisophylla* Mont.; see Prantl 1891 and Pócs 2010).

≡*Cyrtolejeunea saccatiloba* (Steph.) Gradst., *Beih. Nova Hedwigia* 80: 110, 1985 (Gradstein and Buskes 1985).

≡*Oryzolejeunea saccatiloba* (Steph.) Gradst. *Lindbergia* 23(2): 77, 1998 (Dauphin et al. 1998).

=*Cyrtolejeunea antillana* R.M.Schust., *Bull. Torrey Bot. Club* 97(6): 336, 1970 (Schuster 1970), syn. fide Grolle in Dauphin et al. (1998): Type: Dominica.

≡*Oryzolejeunea antillana* (R.M.Schust.) R.M.Schust., *J. Hattori Bot. Lab.* 72: 249, 1992 (Schuster 1992b).

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Oryzolejeunea saccatiloba*). QUICHÉ: S. loc., *Pérez 2190* (USCG, Pérez 2009 as *Oryzolejeunea saccatiloba*).

***NICARAGUA.** *ESTELÍ: Estelí municipio, Cuesta de Kukamonga, at km 168 Pan-American Highway N of Estelí, 13°15′00″N, 86°21′38″W, 860 m, 5 May 2010, *Magill 13898*, det. Dauphin May 2017 (MO-6234822! http://tropicos.org/specimen/100344428, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Oryzolejeunea saccatiloba*; Schäfer-Verwimp 2014 as *Lejeunea saccatiloba*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-623* (hb. Lücking, **Lücking 1995** as *Oryzolejeunea antillana*; **Dauphin et al. 1998** as *Oryzolejeunea saccatiloba*; **Dauphin 2005** as *Oryzolejeunea saccatiloba*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Oryzolejeunea antillana*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Oryzolejeunea saccatiloba*). SAN JOSÉ: Pérez Zeledón cantón, Pérez Zeledón cantón, Chirripó National Park, Fila Cementerio de La Máquina, 9°30′N, 83°30′W, 2,920 m, *Kappelle 3947a* (U, GOET, **Kappelle 1996** as *Cyrtolejeunea saccatiloba*; **Dauphin et al. 1998** as *Oryzolejeunea saccatiloba*; **Dauphin 2005** as *Oryzolejeunea saccatiloba*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,520 m, *Schäfer-Verwimp & Verwimp 34392*, *34452 p.p.* (JE, **Schäfer-Verwimp 2014** as *Lejeunea saccatiloba*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea intricata Prantl, *Hedwigia* 31: xvi, 1892 (Prantl 1892). Type: Colombia.

≡*Crossotolejeunea intricata* (Prantl) Steph., *Hedwigia* 35(3): 75, 1896 (Stephani 1896).

=*Crossotolejeunea rotundata* S.Winkl., *Rev. Bryol. Lichénol.* 35(1/4): 318, 1967 (Winkler 1967), syn. fide Reiner-Drehwald and Goda (2000). Lectotype (Reiner-Drehwald and Goda 2000 as "holotype") or possibly holotype: El Salvador. Santa Ana: Metapan, Cerro Miramundo, hacienda Montecristo, 2,220 m, *Winkler A/32/δ/2* (ULM).

=*Lejeunea cristatella* auct. Note: The record of *Lejeunea cristatella* by Lücking (1995) is erroneous. The specimen belongs to *Lejeunea intricata* (Reiner-Drehwald and Goda 2000).

EL SALVADOR. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 2,200 m, *Winkler A/32/δ/2* (**TYPE** of *Crossotolejeunea rotundata*, **Winkler 1967** as *Crossotolejeunea rotundata*); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, 23 May 1962, *Winkler A/26/3*, *A/32/γ/9*, *B/6/b/1* (**Winkler 1967** as *Crossotolejeunea rotundata*); Metapán municipio, Cerro Miramundo, hacienda Montecristo, 2,220 m, 23 May 1962, *Winkler A/32/5/Z* (TUB, **Bonner 1977** as *Crossotolejeunea rotundata*); Metapán municipio, Cerro Miramundo, hacienda Montecristo, 2,220 m, 23 May 1962, *Winkler A/32/8/2* (ULM, **Reiner-Drehwald and Goda 2000**).

COSTA RICA. S. loc. (Holz et al. 2001; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014); Cordillera de Talamanca (**Holz and Gradstein 2005b**;

Holz 2006). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-477* (**Dauphin 2005** as *Lejeunea acanthoda*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-156*, *92-234*, *92-367*, *etc.* (hb. Lücking, **Lücking 1995** as *Lejeunea cristatella*; **Dauphin et al. 1998** as *Crossotolejeunea cristatella*; **Reiner-Drehwald and Goda 2000**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea cristatella*). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 2,950 m, 9 Nov 1999, *Holz CR 99-548* (GOET, **Holz et al. 2001**); Dota cantón, San Gerardo, 1,950 m, 24 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0039/A* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34558/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Lejeunea laeta (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 380, 1845 (Gottsche et al. 1845a).

≡*Jungermannia laeta* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 45, 1834 (Lehmann 1834). Type: Brazil.

GUATEMALA. S. loc. (Schuster 1980d). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. ALAJUELA: Río Cuatre cantón, Río María Aguilar, between Cariblanco and Laguna Hule, 900 m, 12 Jan 1996, *Dauphin & Gonzáles 2151* (GOET, **Reiner-Drehwald et al. 2018**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, 900 m, 1 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0399* (CR, JE, **Reiner-Drehwald et al. 2018**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,670 m, *Schäfer-Verwimp & Verwimp 34438* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.67′N, 82°42.85′W, 1,220 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34691* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34118*, *34128*, *34131/A* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Bahía Chatham, 5°32′57″N, 87°03′36″W, 0 m, *Dauphin*, det. G. Dauphin Apr 2021 (USJ-47197!, CR-4468401!, W-0207444! https://w.jacq.org/W0207444, **this publication**); Península Presidio del costado a Bahía Wafer, 5°32′57″N, 87°03′56″W, 5 m, *Dauphin 1039*, det. G. Dauphin Feb 2021 (USJ-47196!, CR-4468150!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 19 Jan 1990, *Dauphin 931*, det. G. Dauphin Jan 2021 (USJ-47188!, CR-4468171!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 19 Jan 1990, *Dauphin 939*, det. G. Dauphin Jan 2021 (CR!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea laetevirens Nees et Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 469, 1842 (Montagne 1842b). Type: Cuba.

≡*Microlejeunea laetevirens* (Nees et Mont.) A.Evans, *Bryologist* 11(4): 68, 1908 (Evans 1908b).

=*Lejeunea lepida* Lindenb. et Gottsche, *Syn. Hepat.* 5: 766, 1847 (Gottsche et al. 1847), syn. fide Reiner-Drehwald (2010a). Type: Mexico.

GUATEMALA. S. loc. (Bischler et al. 1961; Fulford 1987; Fulford and Sharp 1990; **Lücking 1995**; Oliveira-e-Silva and Yano 2000; Bastos 2004). ALTA VERAPAZ: Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Panzós municipio, Cerca del Río Polochic, abajo de Panzós, *Maxon & Hay 8090* (**Schuster 1962**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 124*, *448* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: S. loc., *Pérez 1453* (USCG, Pérez 2009). *IZABAL: Livingston, private property along Rio Dulce, 15°39.213′N, 89°00.119′W, 22 Jan 2006, *Quedensley 4106*, det. Dauphin 2017 (MO, W-0089069!, **this publication**). RETALHULEU: S. loc., *Maxon & Hay 3517* (MO, Pérez 2009); San Felipe, *Maxon & Hay 8515* (**Schuster 1962**).

BELIZE. S. loc. (**Fulford 1938** as *Microlejeunea laetevirens*; Frye and Clark 1947 as *Microlejeunea laetevirens*; Schuster 1980d; Fulford 1987; Fulford and Sharp 1990; Lücking 1995; Whittemore and Allen 1996; Oliveira-e-Silva and Yano 2000; Bastos 2004); S. loc., *Hunt 34 p.p.* (**Schuster 1962**). *BELIZE: Sibun River near Gracie Rock, 17°23′N, 88°28′W, 10 m, 26 Feb 1997, *Allen 19080*, det. Whittemore 1997 (MO-4417003! http://tropicos.org/specimen/90046827, **this publication**); Sibun River near Gracie Rock, 17°23′N, 88°28′W, 10 m, 26 Feb 1997, *Allen 19087*, det. Whittemore 1997 (MO-4417004! http://tropicos

.org/specimen/90046826, **this publication**). *STANN CREEK: Cockscombe Reserve, 17 Mar 1996, *Eggers BEZ 5/24* (**Eggers et al. 2001**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, campamento CURLA and confluence of Rio Bonito and Quebrada Grande, 15°42′N, 86°51′W, 11 Apr 1996, *Allen 17219*, det. Dauphin Jun 2017 (MO-6230324! https://www.tropicos.org/specimen/100367467, **this publication**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54485*, *54882*, *55669* (JE, **Herzog 1951** as *Lejeunea lepida*). *COMAYAGUA: Rio Selguapa, ~4 km SE of Siguatepeque, 14°34′N, 87°48′W, 8 May 1992, *Allen 11764*, det. Dauphin Jun 2017 (MO-5227666! https://www.tropicos.org/specimen/90096944, **this publication**). *COPÁN: Copán municipio, Copán Ruinas, Quebrada Sesesmil, ~4.3 km N of ruins, road to Agua Caliente, 14°52′N, 89°10′W, 29 Apr 1996, *Allen 17704*, det. Dauphin Jun 2017 (MO-6230328!, **this publication**). *CORTÉS: Potrerillos municipio, 2 km above Potrerillos, 15°11′N, 87°58′W, 7 Dec 1984, *Olson 84-62a*, det. Dauphin May 2017 (MO-5238383! https://www.tropicos.org/specimen/90108662, **this publication**). *FRANCISCO MORAZÁN: Distrito Central municipio, La Tigre National Park near Tegucigalpa, 14°15′N, 87°15′W, 22 Sep 1983, *Olson 83-9a*, det. Dauphin Jun 2017 (MO-5227806!, **this publication**).

***EL SALVADOR.** *CABAÑAS: Ilobasco municipio, 2.6 km E of Ilobasco, 13°52′04″N, 88°51′04″W, 21 Jan 1998, *Davidse 37154*, det. Dauphin Jun 2017 (MO-5280772! http://tropicos.org/specimen/90136897, **this publication**). *LA UNIÓN: Conchagua municipio, Volcán Conchagua, 13°16′N, 87°50′W, 31 Jan 1998, *Monro 2067*, det. Dauphin Jun 2017 (MO-5280770! http://tropicos.org/specimen/90136899, **this publication**). *SAN SALVADOR: Lake Ilopango, 3 Feb 1998, *Sidwell 630*, det. Dauphin Jun 2017 (MO-5280792! http://tropicos.org/specimen/90136893, **this publication**); Nejapa municipio, Volcán San Salvador, El Boqueron, 13°45′50″N, 89°16′15″W, 4 Feb 1998, *Monro 2244*, det. Dauphin Jun 2017 (MO-5280793! http://tropicos.org/specimen/90136892, **this publication**). *SANTA ANA: Metapán municipio, Calle Los Planes, 12 Nov 2014, *Búcaro H323 p.p.*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, Sendero Pionero, 4 Nov 2014, *Búcaro H297*, det. Dauphin (MHES!, **this publication**); Quebrada Las Huertas, 12 Nov 2014, *Búcaro H302*, det. Dauphin (MHES!, **this publication**); Santa Ana municipio, Cerro Verde National Park, 13°29′N, 88°32′W, 23 Jan 1998, *Sidwell et al. 456*, det. Dauphin Jun 2017 (MO-5280771! http://tropicos.org/specimen/90136898, **this publication**); Santa Rosa Guachipílín municipio, Calle Los Planes, 12 Nov 2014, *Búcaro H312*, det. Dauphin (MHES!, **this publication**).

***NICARAGUA.** Laguna Miraflores, 10–11 Jun 1981, *Henrich & Stevens 284*, det. Dauphin May 2017 (MO-5238376! http://tropicos.org/specimen/90108654, **this publication**).

COSTA RICA. S. loc. (Stephani 1915 as *Lejeunea lepida*; Fulford and Sharp 1990 also as *Lejeunea lepida*); S. loc., *Schäfer-Verwimp & Holz SV/H-0315/A* (GOET, **Heinrichs et al. 2013**); S. loc., *Schäfer-Verwimp & Holz SV/H-0406* (GOET, **Heinrichs et al. 2013**); Cordillera de Talamanca (Holz 2003 as *Lejeunea lepida*; Holz 2006; **Holz and Gradstein 2005b** as *Lejeunea lepida*). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Sector Las Pailas, sendero al cráter, *Dauphin et al. 1855* (CR, **Dauphin 2005**); Piedra Blanca, 2,400 m, *Valerio 59* (**Herzog 1951** as *Lejeunea lepida*; **Morales 1991** as *Lejeunea lepida*; **Dauphin 2005** as *Lejeunea lepida*); Tilarán, 500–600 m, *Standley 46647 p.p.* (B-26013, B-46647, **Herzog 1951** as *Lejeunea lepida*; **Morales 1991** as *Lejeunea lepida*; **Dauphin 2005** as *Lejeunea lepida*). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail (Dauphin 2005); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-86*, *91-94*, *91-95*, *etc.* (**Lücking 1997**); Pococí cantón, Braulio Carrillo National Park, near park entrance, 10°06.9′N, 83°58.4′W, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0283/A* (CR, JE, **Ellis et al. 2014a**); Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, *Egremy 322*, det. Dauphin (CR, **Dauphin 2005**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**). SAN JOSÉ: Desamparados cantón, Frailes, between San Antonio and San Cristóbal Sur, 0.5 km NE of bridge over Quebrada Piedades, 1,800 m, 12 Dec 1986, *Kappelle & Gutiérrez 1780*, *1834* (GOET, **Holz et al. 2001** as *Lejeunea lepida*; **Dauphin 2005** as *Lejeunea lepida*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Lejeunea lepida*); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 2,950 m, 9 Nov 1999, *Holz CR 99-548* (GOET, **Holz et al. 2001** as *Lejeunea lepida*; **Dauphin 2005** as *Lejeunea lepida*).

PANAMA. S. loc. (Lücking 1995); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34465/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,500 m, *Schäfer-Verwimp & Verwimp 34389/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N,

82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34717/B* (JE, **Schäfer-Verwimp 2014**); Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34559/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34617/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34664/B*, *34676/A*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34768*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34154* (JE, **Schäfer-Verwimp 2014**); Antón distrito, Restaurant India Dormida, *Salazar Allen et al. 953* (PMA, **Stotler et al. 1998**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 669*, *776* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); around INRENARE's station, foothills of Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9215* (PMA, **Stotler et al. 1998**); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013); La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Microlejeunea laetevirens*; **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Shattuck 569 p.p.* (**Haynes 1933** as *Microlejeunea laetevirens*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller 24, *Salazar Allen & Chung 4519* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller 25–26, *Salazar Allen & Chung 4503* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Laboratory area, 2003, *Dauphin 3196* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Laboratory area, 2003, *Dauphin 3206* (CR, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=27996&Z_CHK=3417, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lutz trail, *Shattuck 569 p.p.* (F, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3132* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34287/B*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995, 1999). Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 260* (USJ, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 548* (hb. Bernecker, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 50 m, Apr 1992, *Lücking 92-260* (hb. Lücking, **Lücking 1995**).

Also reported from Macaronesia, Middle Atlantic Ocean, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea minutiloba A.Evans, *Bull. Torrey Bot. Club* 44(11): 525, 1917 (Evans 1917b). Type: Virgin Islands.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 95*, *156*, *492* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013); La Chorrera distrito, Barro Colorado Island, Camino Wetmore 21, *Salazar Allen et al. 5943* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 4*, *5*, *34* (PMA, **Stotler et al. 1998**).

Also reported from Indian Subcontinent, Southeastern Pacific, Southeastern USA, the Caribbean, Western South America(?), Brazil.

Lejeunea osculatiana De Not., *Mem. Reale Accad. Sci. Torino*, ser. 2, 16: 233, 1857 (De Notaris 1857). Type: Ad flumen Napo.

=*Taxilejeunea lancifolia* Steph., *Biblioth. Bot.* 87(2): 262, 1916 (Stephani 1916b), syn. fide Reiner-Drehwald and Schäfer-Verwimp (2008). Type: Bolivia.

≡*Macrolejeunea lancifolia* (Steph.) Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 162, 1951 (Herzog 1951).

≡*Lejeunea lancifolia* (Steph.) G.Dauphin, *Trop. Bryol.* 26: 177, 2005 (Dauphin 2005).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Macrolejeunea lancifolia*; **Holz and Gradstein 2005b** as *Macrolejeunea lancifolia*). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47982* (B-26125, **Herzog 1951** as *Lejeunea lancifolia*; **Morales 1991** as *Lejeunea lancifolia*; **Dauphin 2005** as *Lejeunea lancifolia*). CARTAGO: El Guarco, *Mata 49 p.p.* (USJ, **Dauphin 2005** as *Lejeunea lancifolia*). GUANACASTE: S. loc. (Reiner-Drehwald and Schäfer-Verwimp 2008); Tilarán cantón, Los Ayotes, 600–700 m, *Standley 45459 p.p.* (**Herzog 1951** as *Macrolejeunea lancifolia*; **Morales 1991** as *Macrolejeunea lancifolia*; **Dauphin 2005** as *Lejeunea lancifolia*). PUNTARENAS: Monteverde (Morales 1991 as *Macrolejeunea lancifolia*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Macrolejeunea lancifolia*); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, Nov 1993, *Gradstein 9400*, *9426* (GOET, **Reiner-Drehwald and Schäfer-Verwimp 2008**); Monteverde, *James, M.*

14 (**Dauphin 2005** as *Lejeunea lancifolia*); Monteverde, 10 Jun 1966, *James, M. 14* (R, **Reed and Robinson 1971** as *Macrolejeunea lancifolia*). SAN JOSÉ: S. loc. (Reiner-Drehwald and Schäfer-Verwimp 2008); Dota cantón, San Gerardo, path La Quebrada, "Los Robles," 2,220 m, Jan 2000, *Schäfer-Verwimp & Holz SV/H-0496/B* (GOET, CR, JE, **Reiner-Drehwald and Schäfer-Verwimp 2008**; **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**); Dota cantón, San Gerardo, path La Quebrada, 2,300 m, Sep 1999, *Anton et al. AHH 82* (GOET, **Reiner-Drehwald and Schäfer-Verwimp 2008**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Macrolejeunea lancifolia*); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38368* (**Herzog 1951** as *Macrolejeunea lancifolia*; **Morales 1991** as *Macrolejeunea lancifolia*; **Dauphin 2005** as *Lejeunea lancifolia*).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 30958* (GOET, **Heinrichs et al. 2013**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,950 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30992/A*, *31007* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30958* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34535*, *34546*, *34576* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional La Amistad, path "El Retoño," 8°53′N, 82°36′W, 2,462 m, *Reiner-Drehwald 960038* (PMA, **Reiner-Drehwald and Schäfer-Verwimp 2008**). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34312*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, Northern South America, Western South America.

Lejeunea pallescens Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 360, 1851 (Mitten 1851). Type: Ecuador.

≡*Macrolejeunea pallescens* (Mitt.) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

=*Taxilejeunea peruviana* Steph., *Sp. Hepat. (Stephani)* 5: 475, 1914 (Stephani 1914), syn. fide Gradstein (2021). Lectotype: Ecuador.

COSTA RICA. S. loc. (**Stephani 1914** as *Taxilejeunea peruviana*; **Geissler and Bischler 1990** as *Taxilejeunea peruviana*; Gradstein 1999a as *Macrolejeunea pallescens*; Dauphin 2005; Gradstein and Holz 2005 as *Macrolejeunea pallescens*; Schäfer-Verwimp et al. 2013; Gradstein 2021); Cordillera de Talamanca (Holz 2003 as *Macrolejeunea pallescens*; **Holz and Gradstein 2005b** as *Macrolejeunea pallescens*); Cordillera de Talamanca, *Kappelle 5642* (U, **Kappelle 1996** as *Macrolejeunea pallescens*). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope, 2,000–2,400 m, *Standley 35305* (**Herzog 1951** as *Macrolejeunea pallescens*; **Morales 1991** as *Macrolejeunea pallescens*; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Macrolejeunea pallescens*); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Siberia de Villa Mills, 1.5 km NE of the Carretera Interamericana, 2,630 m, Jan 1986, *Kappelle & Abarca 623* (U, **Reiner-Drehwald and Schäfer-Verwimp 2008**); Vásquez de Coronado cantón, Las Nubes (Dauphin 2005); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 3861* (**Herzog 1951** as *Macrolejeunea pallescens*; **Morales 1991** as *Macrolejeunea pallescens*).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Lejeunea parviloba Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 33(7): 87, 1876 (Ångström 1876). Type: Brazil.

=*Lejeunea tapajosensis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 223, 1884 (Spruce 1884), syn. fide Bastos and Gradstein (2020a). Type: Brazil.

≡*Rectolejeunea tapajosensis* (Spruce) R.M.Schust., *Hepat. Anthoc. N. Amer.* 4: 1146, 1980 (Schuster 1980d).

=*Rectolejeunea defolians* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 168, 1951 (Herzog 1951), syn. with *Lejeunea tapajosensis* fide Reiner-Drehwald and Grolle (2012). Lectotype (Reiner-Drehwald and Grolle 2012: 475): Honduras, Atlántida, Lancetilla Valley, near Tela, 20–600 m, Standley *55626* (JE-04009370 https://je.jacq.org/JE04009370, isolectotype B-300026013 https://herbarium.bgbm.org/object/B300026013).

***GUATEMALA.** *EL PETÉN: Flores municipio, SW side of Laguna Yaxhá, Reserva Privada Yaxhá, 17°03.295′N, 89°23.236′W, 259 m, 25 Jan 2006, *Quedensley 4220*, det. Dauphin Sep 2017 (MO, W-0089072!, **this publication**).

HONDURAS. S. loc. (Schuster 1980d as *Rectolejeunea defolians*; Schuster 2000a as *Rectolejeunea defolians*). ATLÁNTIDA: Tela municipio, La Fragua, 20 m, *Standley 55775* (**Herzog 1951** as *Rectolejeunea defolians*; **Geissler and Bischler 1990** as *Rectolejeunea defolians*; **Reiner-Drehwald and Grolle 2012** as *Rectolejeunea tapajosensis*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55626* (JE, C, **Herzog 1951** as *Rectolejeunea defolians*; **Reiner-Drehwald and Grolle 2012** as *Rectolejeunea tapajosensis*).

COSTA RICA. S. loc. (Schuster 2000a as *Rectolejeunea defolians*). GUANACASTE: Tilarán, 500–650 m, *Standley & Valerio 46647 p.p.* (JE, **Geissler and Bischler 1990** as *Rectolejeunea defolians*; **Reiner-Drehwald and Grolle 2012** as *Rectolejeunea tapajosensis*); Tilarán, 500–600 m, *Standley 46647 p.p.* (B-26013, B-46647, **Herzog 1951** as *Rectolejeunea defolians*; **Morales 1991** as *Rectolejeunea defolians*; **Dauphin 2005** as *Rectolejeunea defolians*).

PANAMA. Canal Zone (Schäfer-Verwimp 2014 as *Lejeunea tapajosensis*); S. loc. (Schäfer-Verwimp and Van Melick 2016 as *Lejeunea tapajosensis*; Gradstein 2021 as *Lejeunea tapajosensis*). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34755*, *34766* (JE, **Schäfer-Verwimp 2014** as *Lejeunea tapajosensis*). PANAMA WEST: La Chorrera distrito,

Barro Colorado Island (Reiner-Drehwald et al. 2013 as *Lejeunea tapajosensis*); La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20 m, 27 Feb 1999, *Dauphin 3158* (CR, PMA, **Dauphin et al. 2006** as *Lejeunea tapajosensis*, **2022**); La Chorrera distrito, Barro Colorado Island, Fairchild 4, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3137*, det. M. E. Reiner-Drehwald (PMA, GOET, **Dauphin et al. 2006** as *Lejeunea tapajosensis*); La Chorrera distrito, Barro Colorado Island, Laboratory Cove, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3144*, det. M. E. Reiner-Drehwald (PMA, GOET, **Dauphin et al. 2006** as *Lejeunea tapajosensis*); La Chorrera distrito, Barro Colorado Island, Miller Cove, 2003, *Dauphin 3217* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Miller Cove, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3127* (PMA, **Dauphin et al. 2006** as *Lejeunea tapajosensis*); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3137* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3144* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Lutz tower, 2003, *Dauphin 3085* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34281*, *34290* (JE, **Schäfer-Verwimp 2014** as *Lejeunea tapajosensis*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea paucidentata (Steph.) Grolle, *J. Hattori Bot. Lab.* 69: 191, 1991 (Grolle 1991).

≡*Crossotolejeunea paucidentata* Steph., *Hedwigia* 35(3): 76, 1896 (Stephani 1896). Type: Cuba.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,000 m, sobre piedra en quebrada, 16 May 1987, *N. Salazar A. 5343*, det. J. E. De Gracia, 2004 (PMA, **Salazar Allen et al. 2021**).

Also reported from the Caribbean, Northern South America.

Lejeunea perigonialis Gottsche, *Mexik. Leverm.*: 223, 1863 (Gottsche 1863). Type: Mexico.

≡*Microlejeunea perigonialis* (Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 823, 1915 (Stephani 1915).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54225 p.p.*, *54882*, *55511*, *56848 p.p.* (**Herzog 1951** as *Microlejeunea perigonialis*).

Also reported from Mexico.

Lejeunea phyllobola Nees et Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 471, 1842 (Montagne 1842b). Type: Cuba.

≡*Hygrolejeunea phyllobola* (Nees et Mont.) Steph., *Hedwigia* 29: 81, 138, 1890 (Stephani 1890c), nom. inval. (ICN2018 Art. 35.1; genus not valid).

≡*Hygrolejeunea phyllobola* (Nees et Mont.) C.Massal., *Hepat. Shen-si*: 33, 1897 (Massalongo 1897).

≡*Cheilolejeunea phyllobola* (Nees et Mont.) Schiffn., *Bot. Jahrb. Syst.* 23(5): 591, 1897 (Schiffner 1897).

≡*Rectolejeunea phyllobola* (Nees et Mont.) A.Evans, *Bull. Torrey Bot. Club* 33(1): 15, 1906 (Evans 1906b).

=*Lejeunea cephalandra* Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cx-ciii, 1889 (Spruce 1889), syn. fide Reiner-Drehwald (2000a). Type: Paraguay.

=*Rectolejeunea brittoniae* A.Evans, *Bull. Torrey Bot. Club* 38(6): 209, 1911 (Evans 1911b), syn. fide Reiner-Drehwald (2000a). Type: Bahamas.

GUATEMALA. QUICHÉ: S. loc., *Pérez 2197* (USCG, Pérez 2009).

BELIZE. S. loc. (**Fulford 1938** as *Rectolejeunea phyllobola*; Frye and Clark 1947 as *Rectolejeunea phyllobola*; Whittemore and Allen 1996 as *Rectolejeunea phyllobola*).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54378* (**Herzog 1951** as *Rectolejeunea phyllobola*).

COSTA RICA. S. loc. (Evans 1902b as *Cheilolejeunea phyllobola*, 1906b as *Rectolejeunea phyllobola*; Stephani 1914 as *Cheilolejeunea phyllobola*; Pagán 1939b as *Rectolejeunea phyllobola*; Bonner 1963b as *Cheilolejeunea phyllobola*, 1966 as *Hygrolejeunea phyllobola*; Fulford et al. 1970 as *Rectolejeunea phyllobola*; Schuster 1980d as *Rectolejeunea phyllobola*; Cole 1982, 1983, both as *Rectolejeunea brittoniae*; Fulford 1987 as *Rectolejeunea phyllobola*; Fulford and Sharp 1990 as *Rectolejeunea phyllobola*; Morales 1991 as *Rectolejeunea phyllobola*; Dauphin 2005; Stotler and Crandall-Stotler 2017); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, Universidad de Costa Rica, 1,000 m, 31 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0384a* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**). CARTAGO: Jiménez cantón, Juan Viñas (Tonduz 1895b as *Hygrolejeunea phyllobola*); Jiménez cantón, Juan Viñas, 1,135 m, *Pittier 6040* (**Stephani 1893c** as *Hygrolejeunea phyllobola*); Paraíso cantón, Jardín Lankester, *Griffin & Morales C137*, det. Breil (USJ, FLAS, **Morales 1991** as *Rectolejeunea brittoniae*; **Dauphin 2005**); Paraíso cantón, Tapantí National Park, Orosi Valley 0.6 km before entrance of national park, 600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0373/A* (hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**). *GUANACASTE: Tilarán cantón, Hacienda Quebrada Azul on lower slopes of Volcán Tenorio, 18 Feb 1930, *Dodge & Thomas*, det. Dauphin May 2017 (MO-5217029!, **this publication**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** also as *Lejeunea cephalandra*). SAN JOSÉ: Dota cantón, Cordillera de Talamanca, 4 km NE of San Gerardo, 2,950 m, 10 Mar 1999, *Kunz 35* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, San Isidro, Parque, 750 m, 27 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0206/C* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete, 9 Aug 1950, *Chickering* (**Crum and Arzeni 1953** as *Rectolejeunea phyllobola*; **Stotler et al. 1998**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro

Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea phyllobola*); Cerro Pirre, between Pirre 1 and Pirre 2, *Salazar Allen & Gradstein 9198* (PMA, **Stotler et al. 1998**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea phyllobola*); INRENARE station, foothills of Cerro Pirre, *Salazar Allen & Gradstein 9223* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen s.n.* (**Dauphin et al. 2022**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 14 Feb 1994, *Dauphin 1056* (USJ, CR, **Dauphin 1995** as *Rectolejeunea phyllobola*, **1999**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, Southern Africa, Western Indian Ocean, Indian Subcontinent, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea praetervisa Steph., *Sp. Hepat. (Stephani)* 5: 752, 1915 (Stephani 1915). Type: Peru.

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55577 p.p.*, *55741* (JE, **Herzog 1951**). Also reported from Western South America.

Lejeunea pterigonia (Lehm. et Lindenb.) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 337, 1840 (Montagne 1840).

≡*Jungermannia pterigonia* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 44, 1834 (Lehmann 1834). Type: Peru.

≡*Taxilejeunea pterigonia* (Lehm. et Lindenb.) Steph., *Hedwigia* 29(3): 142, 1890 (Stephani 1890a).

=*Taxilejeunea pterigonia* f. *perianthio-minus-ornato* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 155, 1951 (Herzog 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Prov. Cartago, El Muñeco, 1,400–1,500 m, wet bank, *Standley 33480* (US-04659274 http://n2t.net/ark:/65665/391630486-f59c-429b-b739-0a9b01d370b6).

GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Taxilejeunea* '*pterogonia*'; Oliveira-e-Silva and Yano 2000). ALTA VERAPAZ: Cobán, 1886, *Türckheim 11*, det. Steph. (**Evans 1921b** as *Taxilejeunea* '*pterogonia*'); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 247* (USCG, Pérez 2009 as *Taxilejeunea pterigonia*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Taxilejeunea pterigonia*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 534* (USCG, **Freire et al. 2013** as *Taxilejeunea pterigonia*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Taxilejeuna ptorigonia*').

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15099*, *15104*, *15484* (BRH, MO, **Whittemore and Allen 1996** as *Taxilejeunea pterigonia*). TOLEDO: S. loc., Dec 1993, *Allen 15311* (BRH, MO, **Whittemore and Allen 1996** as *Taxilejeunea pterigonia*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Taxilejeunea* '*pterogonia*'; Fulford and Sharp 1990 as *Taxilejeunea* '*pterogonia*'). CARTAGO: Cartago cantón, El Muñeco, 1,400–1,500 m, *Standley 33480* (**Herzog 1951** as *Taxilejeunea pterigonia* f. *perianthio-minus-ornato*; **Morales 1991** as *Taxilejeunea pterigonia*); Cartago cantón, El Muñeco, 1,400–1,500 m, *Standley 51111* (**Herzog 1951** as *Taxilejeunea pterigonia*; **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Cartago cantón, El Muñeco, N of Navarro, 1,400 m, *Standley 33928* (US, **Dauphin 2005** as *Taxilejeunea pterigonia*). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52074* (**Herzog 1951** as *Taxilejeunea pterigonia*); Sarapiquí cantón, Salto La Paz, *Woodruff* (FLAS, **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*). LIMÓN: Siquirres cantón, Finca La Colombiana, 70 m, *Standley 36572* (**Herzog 1951** as *Taxilejeunea pterigonia*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Taxilejeunea pterigonia*); Monteverde (Morales 1991 as *Taxilejeunea pterigonia*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Taxilejeunea pterigonia*); Monteverde, *James, W. 29* (**Dauphin 2005** as *Taxilejeunea pterigonia*); Monteverde, 15 Jan 1965, *James, M. 29* (R, **Reed and Robinson 1971** as *Taxilejeunea pterigonia*); Monteverde, 16 Mar 1969, *James, W. 1969-70* (**Reed and Robinson 1971** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*). SAN JOSÉ: Dota cantón, Quebradillas, N de Santa María de Dota, 1,800 m, *Standley 42897*, *43242* (US, **Herzog 1951** as *Taxilejeunea* '*pterogonia*'; **Morales 1991** as *Taxilejeunea pterigonia*; **Kappelle 1996** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Moravia cantón, Camino de Carrillo, *Pittier 6064* (**Stephani 1893c** as *Taxilejeunea pterigonia*; **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48118* (**Herzog 1951** as *Taxilejeunea pterigonia*; **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51875b* (**Herzog 1951** as *Taxilejeunea pterigonia*; **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Jerez*, det. Griffin (FLAS, **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*); Vásquez de Coronado cantón, Las Nubes, *Morales 267* (FLAS, USJ, **Morales 1991** as *Taxilejeunea pterigonia*; **Dauphin 2005** as *Taxilejeunea pterigonia*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34642* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34534/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra**

et al. 2020); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

COCOS I. S. loc. (Fosberg and Klawe 1966 as *Taxilejeunea pterigonia*; Dauphin 1995, 1999, 2005, all as *Taxilejeunea pterigonia*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Taxilejeunea pterigonia*); Chatham Bay, 28 Jun 1932, *Howell 228* (CAS, **Clark 1953a** as *Taxilejeunea pterigonia*); Wafer Bay, 28 Jun 1932, *Howell 224* (CAS, **Clark 1953a** as *Taxilejeunea pterigonia*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea puiggariana Steph., *Sp. Hepat. (Stephani) 5*: 754, 1915 (Stephani 1915). Type: Brazil.

***NICARAGUA.** *MATAGALPA: Matagalpa municipio, between Hacienda La Hamonia and Cerro La Carlota, 12°59′N, 85°53′W, 1,200–1,300 m, 10 Dec 1983, *Stevens & Montiel 22563*, det. Dauphin May 2017 (MO-5238575! https://tropicos.org/specimen/90108673, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013; Schäfer-Verwimp 2014). LIMÓN: Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, 38 m, *Egremy 318.1*, det. Reiner-Drehwald (CR, GOET, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34632/B* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Fila entre Bahía Wafer y Chatham, sobre ladera que va hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, *Estrada et al. 6136*, det. G. Dauphin Jun 2021 (CR-4468339!, **this publication**).

Also reported from Mexico, the Caribbean, Western South America, Brazil, Southern South America.

Lejeunea pulverulenta (Steph.) M.E.Reiner, *Cryptog. Bryol.* 26(1): 60, 2005 (Reiner-Drehwald 2005a).

≡*Taxilejeunea pulverulenta* Steph., *Sp. Hepat. (Stephani) 5*: 477, 1914 (Stephani 1914). Type: Guadeloupe.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3138* (CR, PMA, **Dauphin et al. 2022**).

COCOS I. Fila entre Bahía Wafer y Chatham, sobre ladera hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, 27 Nov 2017, *Estrada, Rodríguez & Umaña 6135*, det. Dauphin May 2021 (CR-4468338!, **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea quinqueumbonata Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 230 (Spruce 1884) var. ***rotundata*** (Herzog) Sushil K.Singh, *Phytotaxa* 96(1): 64, 2013 (Singh 2013).

≡*Otigoniolejeunea quinqueumbonata* (Spruce) Steph., *Sp. Hepat. (Stephani) 5*: 515 (Stephani 1914) var. *rotundata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 154, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 15): Honduras, Atlántida, Lancetilla Valley near Tela, *Standley 55379* (JE-04006773 https://je.jacq.org/JE04006773, isolectotype JE-04001622 https://je.jacq.org/JE04001622).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55379* (JE-04006773 https://je.jacq.org/JE04006773, JE-04001622 https://je.jacq.org/JE04001622, **TYPE** of *Otigoniolejeunea quinqueumbonata* var. *rotundata*, **Herzog 1951** as *Otigoniolejeunea quinqueumbonata* var. *rotundata*; **Geissler and Bischler 1989** as *Otigoniolejeunea quinqueumbonata* var. *rotundata*; **Singh 2013**).

Not found outside Central America.

Lejeunea raddiana Lindenb., *Syn. Hepat.* 3: 342, 1845 (Gottsche et al. 1845a). Type: Brazil.

PANAMA. S. loc. (Gradstein 2021; Silva et al. 2021). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30997* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Lejeunea ramulosa Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 274, 1884 (Spruce 1884). Type: Ecuador.

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, 11 Nov 2014, *Búcaro H113*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, Calle Los Planes, 11 Nov 2014, *Búcaro H315*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, Calle Los Planes, 11 Nov 2014, *Búcaro H316*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, Calle Los Planes, 11 Nov 2014, *Búcaro H317*, det. Dauphin (MHES!, **this publication**); Metapán municipio, Montecristo, Los Planes, 11 Nov 2014, *Búcaro H319*, det. Dauphin (MHES!, **this publication**). *SONSONATE: Juayúa, calle a La Unión, 1 Dec 2008, *Búcaro H156*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. S. loc. (Wang and Zhu 2008; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014); S. loc., *Schäfer-Verwimp & Holz SV/H-0229A* (GOET, **Heinrichs et al. 2013**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: El Guarco cantón, 3 de Junio, 2,460 m, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0466/A* (CR, hb. Schäfer-Verwimp, **Holz et al. 2001**; **Dauphin 2005**; **Reiner-Drehwald 2010a**). PUNTARENAS: Coto Brus cantón, Valle del Silencio, 1,680 m, 6 Jul 1995, *Quesada 1185* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**; **Reiner-Drehwald 2010a**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,880 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30989* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34544*, *34559/D*, *34565/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea reflexistipula var. ***costaricensis*** (Steph.) M.E.Reiner, *Nova Hedwigia* 81(3/4): 408, 2005 (Reiner-Drehwald 2005c).

≡*Hygrolejeunea costaricensis* Steph., *Hedwigia* 35(3): 100, 1896 (Stephani 1896). Lectotype (Bonner 1966: 646): Costa Rica, Carrisal, 2,800 m, Jan 1889, *H. Pittier* (G-00282422 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=214857&lang=en, isolectotype JE-04007655 https://je.jacq.org/JE04007655).

≡*Cryptogynolejeunea costaricensis* (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 75: 218, 1994 (Schuster 1994).

COSTA RICA. S. loc. (Stephani 1914 as *Hygrolejeunea costaricensis*; Dauphin 2005 as *Cryptogynolejeunea costaricensis*; Schäfer-Verwimp 2014); S. loc., *Pittier 6013a* (G, **Bischler 1966** as *Hygrolejeunea costaricensis*); S. loc., *Schäfer-Verwimp & Holz SV/H-0434* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**). ALAJUELA: Alajuela cantón, Carrizal, 2,800 m, Jan 1889, *Pittier & Durand 6013a* (G-9954, JE, **TYPE** of *Hygrolejeunea costaricensis*, **Stephani 1896** as *Hygrolejeunea costaricensis*; **Bonner 1966** as *Hygrolejeunea costaricensis*; **Schuster 1994** as *Cryptogynolejeunea costaricensis*; **Dauphin 2005** as *Cryptogynolejeunea costaricensis*; **Reiner-Drehwald 2005c**). CARTAGO: Cordillera de Talamanca, *Schäfer-Verwimp & Holz SV/H-0434* (MO-5915864!, hb. Schäfer-Verwimp, **Reiner-Drehwald 2005c**); El Guarco cantón, 3 de Junio, *Gradstein & Morales 9387* (GOET, **Reiner-Drehwald 2005c**). SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51842 p.p.* (JE, **Herzog 1951** as *Hygrolejeunea costaricensis*; **Morales 1991** as *Hygrolejeunea costaricensis*; **Dauphin 2005** as *Cryptogynolejeunea costaricensis*).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 30930* (GOET, **Heinrichs et al. 2013**). †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This report must refer to the "new" comarca Naso Tjër Di. CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30930* (JE, **Schäfer-Verwimp 2014**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia et al. 359* (GOET, PMA, **Reiner-Drehwald 2005c**).

Not found outside Central America.

Lejeunea reflexistipula (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 3: 335, 1845 (Gottsche et al. 1845a) var. ***reflexistipula***.

≡*Jungermannia reflexistipula* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 10, 1833 (Lehmann 1833). Type: Brazil.

≡*Amphilejeunea reflexistipula* (Lehm. et Lindenb.) Gradst., *Mem. New York Bot. Gard.* 86: 143, 2001 (Gradstein et al. 2001b).

COSTA RICA. Cordillera de Talamanca, *Kappelle & Abarca 633* (ULM, **Reiner-Drehwald 2005c**); Cordillera de Talamanca, *Kappelle 3947* (U, **Kappelle 1996**); S. loc. (Schäfer-Verwimp 2014; Gradstein 2021). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 8387* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005** as *Amphilejeunea reflexistipula*); El Guarco cantón, 3 de Junio, 2,600 m, *Morales & Gradstein 2405* (USJ, **Gradstein et al. 1994**; **Dauphin 2005** as *Amphilejeunea reflexistipula*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, Cerro Orosilito, *Dauphin 2573* (CR, **Dauphin 2005** as *Amphilejeunea reflexistipula*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, *Lücking 92-202* (EGR, **Reiner-Drehwald 2005c**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-388*, *92-389*, *92-552* (ULM, **Lücking 1995**; **Reiner-Drehwald 2005c**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Amphilejeunea reflexistipula*). SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51842 p.p.* (JE, **Reiner-Drehwald 2005c**).

PANAMA. S. loc. (Gradstein 2021). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Parque Internacional La Amistad, Sendero "El Retoño," *Reiner-Drehwald 960039* (GOET, PMA, **Reiner-Drehwald 2005c**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30816* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea rotundifolia Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 359, 1851 (Mitten 1851). Type: Ecuador.

≡*Hygrolejeunea rotundifolia* (Mitt.) Steph., *Sp. Hepat. (Stephani)* 5: 540, 1914 (Stephani 1914).

=*Taxilejeunea auriculata* Steph., *Sp. Hepat. (Stephani)* 5: 459, 1914 (Stephani 1914), syn. fide Gradstein and Pérez (2021). Lectotype: Ecuador.

COSTA RICA. S. loc. (**Stephani 1914** as *Taxilejeunea auriculata*; Bonner 1966 as *Hygrolejeunea rotundifolia*; **Geissler and Bischler 1990** as *Taxilejeunea auriculata*; Schäfer-Verwimp 2014; Gradstein and Uribe 2016; Gradstein 2021). CARTAGO: S. loc., *Schäfer-Verwimp & Holz SV/H-0378* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**); La Estrella, *Standley 39479* (**Herzog 1951** as *Hygrolejeunea rotundifolia*; **Morales 1991** as *Hygrolejeunea rotundifolia*; **Reiner-Drehwald 2005b**). HEREDIA: San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51411*, *51510* (JE, **Herzog 1951** as *Hygrolejeunea rotundifolia*; **Morales 1991** as *Hygrolejeunea rotundifolia*; **Reiner-Drehwald 2005b**); San Isidro cantón, Cerro Zurquí, N of San Isidro, 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50620*, *50640* (JE, **Herzog 1951** as *Hygrolejeunea rotundifolia*; **Morales 1991** as *Hygrolejeunea rotundifolia*; **Reiner-Drehwald 2005b**); San Isidro cantón, Yerba Buena, N of San Isidro, 2,000 m, 22–28 Feb 1926, *Standley & Valerio 49166* (JE, **Herzog 1951** as *Hygrolejeunea rotundifolia*; **Morales 1991** as *Hygrolejeunea rotundifolia*; **Reiner-Drehwald 2005b**). LIMÓN: Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, 19 Feb 1926, *Standley & Valerio 48818* (JE, **Herzog 1951** as *Hygrolejeunea rotundifolia*; **Morales 1991** as *Hygrolejeunea rotundifolia*; **Reiner-Drehwald 2005b**). SAN JOSÉ: Aserrí cantón, Tablazo, 1,900 m, 4 Mar 1908, *Brade* (G-00283254, **Gradstein and Pérez 2021** as *Taxilejeunea*

auriculata); Moravia cantón, La Palma on road to Hondura, 1,500–1,700 m, 17–18 Jul 1923, *Maxon & Harvey 8050* (JE, **Reiner-Drehwald 2005b**).

PANAMA. S. loc. (Gradstein 2021). CHIRIQUÍ: S. loc., *Schäfer-Verwimp & Verwimp 31029* (GOET, **Heinrichs et al. 2013**); Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,930 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 34029* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34460* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34490/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34534/A*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (Rodríguez-Quiel et al. 2022).

Also reported from Western South America.

Lejeunea serpillifolioides (Raddi) Gradst., *Caldasia* 40(1): 87, 2018 (Gradstein et al. 2018b).

≡*Jungermannia serpillifolioides* Raddi, *Critt. Brasil.*: 17, 1822 (Raddi 1822). Type: Brazil.

≡*Taxilejeunea serpillifolioides* (Raddi) D.P.Costa, *J. Bryol.* 31(4): 230, 2009 (Costa 2009).

=*Jungermannia isocalycina* Nees, *Fl. Bras. (Martius)* 1(1): 356, 1833 (Nees 1833b), syn. fide Costa (2009). Type: Brazil.

≡*Taxilejeunea isocalycina* (Nees) Steph., *Hedwigia* 29(3): 141, 1890 (Stephani 1890a).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Taxilejeunea isocalycina*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Taxilejeunea isocalycina*). QUICHÉ: S. loc., *Pérez 2199* (USCG, Pérez 2009 as *Taxilejeunea isocalycina*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea setiloba Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 281, 1884 (Spruce 1884). Type: Brazil.

***GUATEMALA.** *CHIMALTENANGO: Acatenango municipio, Volcán Acatenango road from Páramos to Yepocapa, above Chichoy Bajo, ~8.65 km W of San Miguel Dueñas, 14°32′20.8″N, 90°52′35.9″W, 9 Dec 2013, *Quedensley 13064*, det. Dauphin Sep 2017 (MO, W-0089070! https://w.jacq.org/W0089070, **this publication**). *QUETZALTENANGO: Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 5 Jan 2006, *Quedensley 3872*, det. Dauphin Sep 2017 (MO, W-0089071! https://w.jacq.org/W0089071, **this publication**).

NICARAGUA. CHINANDEGA: El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 242* (CAS, **Clark 1953a**); El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 246*, *270* (CAS, **Clark 1953a**).

COSTA RICA. S. loc. (Cañiza et al. 2017). GUANACASTE: La Cruz, Santa Rosa National Park, sendero Los Borrachos y Camino a Santa Elena, 10°50′05″N, 85°36′50″W, 292 m, 28 Aug 2003, *Dauphin 3254* (CR, **Dauphin 2005**).

COCOS I. S. loc. (Fosberg and Klawe 1966; Dauphin 1995, 1999, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Wafer Bay, 28 Jun 1932, *Walton Clark 221 p.p.* (CAS-372425, **Clark 1953a**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea smaragdina Besch. et Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: clxxxii, 1890 (Bescherelle and Spruce 1889). Type: Guadeloupe.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013); La Chorrera distrito, Barro Colorado Island, Laboratory area, 2003, *Meyer s.n.* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lathrop 3, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3099* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Lathrop-Barbour 10, 2003, *Dauphin 3176* (CR, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=27959&Z_CHK=4177, PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado Island, Snyder-Molino, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3053*, *3056* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Standley 10, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3119*, det. M. E. Reiner-Drehwald (PMA, GOET, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, Zetek 15, 2003, *Dauphin 3221* (PMA, GOET, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado Island, Zetek 15, 9°09′N, 79°51′W, 20–170 m, *Meyer* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado, Lathrop, 2003, *Dauphin 3099* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3053* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Standley, 2003, *Dauphin 3119* (CR, PMA, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=27960&Z_CHK=1875, **Dauphin et al. 2022**).

Also reported from the Caribbean, Western South America.

Lejeunea sporadica Besch. et Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: clxxx, 1890 (Bescherelle and Spruce 1889). Type: Guadeloupe.

≡*Harpalejeunea sporadica* (Besch. et Spruce) Steph., *Sp. Hepat. (Stephani) 5*: 259, 1913 (Stephani 1913).

=*Lejeunea elliottii* Spruce, *J. Linn. Soc., Bot.* 30(210): 346, 1895 (Gepp 1895), syn. fide Schäfer-Verwimp and Reiner-Drehwald (2009). Type: St. Vincent.

=*Trachylejeunea prionocalyx* Gottsche ex Schiffn., *Bot. Jahrb. Syst.* 23(5): 592, 1897 (Schiffner 1897), syn. with *Lejeunea elliottii* fide Reiner-Drehwald and Goda (2000). Type: Cuba.

≡*Crossotolejeunea prionocalyx* (Gottsche ex Schiffn.) Steph., *Sp. Hepat. (Stephani) 5*: 241, 1913 (Stephani 1913).

HONDURAS. S. loc. (Graham et al. 2016). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55669 p.p.* (**Herzog 1951** as *Crossotolejeunea prionocalyx*).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Herzog 1951** as *Harpalejeunea 'sporadia'*; **Morales 1991** as *Harpalejeunea sporadica*; **Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016); S. loc., *Schäfer-Verwimp & Verwimp 31033* (GOET, **Heinrichs et al. 2013**; **Lee et al. 2016, 2019**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,930 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31033* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, Bajo Mono, along Río Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30935* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34134* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea subsessilis Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 282, 1884 (Spruce 1884). Type: Ecuador.

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55669 p.p.* (**Herzog 1951**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/17*, *A/1/9*, *A/32/δ/8* (**Winkler 1967**).

Also reported from the Caribbean, Western South America, Brazil, Southern South America.

Lejeunea subspathulata Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 173, 1884 (Spruce 1884). Type: Ecuador.

≡*Harpalejeunea subspathulata* (Spruce) Steph., *Sp. Hepat. (Stephani) 5*: 261, 1913 (Stephani 1913).

=*Trachylejeunea dilatata* A.Evans, *Bull. Torrey Bot. Club* 35(8): 372, 1908 (Evans 1908a), syn. fide Ilkiu-Borges (2005). Type: Jamaica.

≡*Echinocolea dilatata* (A.Evans) R.M.Schust., *Phytologia* 45(5): 426, 1980 (Schuster 1980b).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Echinocolea dilatata*).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Echinocolea dilatata*; Ilkiu-Borges 2005). CARTAGO: Jiménez cantón, Peijivalle, ~900 m, *Standley 47157* (**Herzog 1951** as *Harpalejeunea subspathulata*; **Morales 1991** as *Harpalejeunea subspathulata*); Jimenéz cantón, Pejibaye (Dauphin 2005). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-238* (USJ, **Gradstein et al. 1994** as *Echinocolea dilatata*; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-172*, *92-238*, *92-371* (hb. Lücking, **Lücking 1995** as *Echinocolea dilatata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Echinocolea dilatata*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Echinocolea dilatata*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Campbell's Wood, 1,550 m, *Sillett 3-8* (U, **Gradstein et al. 1994** as *Echinocolea dilatata*); Monteverde cantón, Campbell's Wood, *Sillett 42436* (**Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Echinocolea dilatata*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Echinocolea dilatata*).

PANAMA. S. loc. (Lücking 1995 as *Echinocolea dilatata*; Gradstein et al. 2001b as *Echinocolea dilatata*; Ilkiu-Borges 2005). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Echinocolea dilatata*); Cerro Pirre, above Rancho Mojado, 1,000 m, *Salazar Allen & Gradstein 9259 p.p.* (PMA, **Stotler et al. 1998** as *Echinocolea dilatata*); above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Echinocolea dilatata*).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 1003*, det. G. Dauphin Jan 2021 (USJ-47356!, CR-4468146!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 15 Feb 1997, *Dauphin 1003* (USJ, **Gradstein et al. 1994** as *Echinocolea dilatata*; **Dauphin 1995**, **1999**, both as *Echinocolea dilatata*, **2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea succulenta Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 171, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 10): Costa Rica: Prov. Guanacaste, vicinity of Tilarán, 500–600 m., *Standley 46647 p.p.* (JE-04010830 https://je.jacq.org/JE04010830, isolectotypes JE-04009372 https://je.jacq.org/JE04009372, JE-04009373 https://je.jacq.org/JE04009373, B-300025227 https://herbarium.bgbm.org/object/B300025227, US-00070960 http://n2t.net/ark:/65665/34d0b12c7-8241-43b2-b288-10f63b277115).

†**HONDURAS.** S. loc. (Reiner-Drehwald 1999). †ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley*

56369 p.p. (JE, **Herzog 1951; Geissler and Bischler 1987**). Note: Not *Lejeunea succulenta* fide an annotation by E. Reiner-Drehwald on the syntype specimen in JE.

COSTA RICA. S. loc. (Reiner-Drehwald 1999). GUANACASTE: Tilarán, 500–600 m, *Standley 46647 p.p.* (B-26013, B-46647, JE, **Herzog 1951; Geissler and Bischler 1987; Morales 1991; Dauphin 2005**).

Not found outside Central America.

Lejeunea sulphurea (Lehm. et Lindenb.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 217, 1884 (Spruce 1884).

≡*Jungermannia sulphurea* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 14, 1833 (Lehmann 1833). Type: West Indies.

≡*Taxilejeunea sulphurea* (Lehm. et Lindenb.) Steph., *Hedwigia* 29(3): 142, 1890 (Stephani 1890a).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 525* (USCG, **Freire et al. 2013** as *Taxilejeunea sulphurea*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Taxilejeunea sulphurea*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Taxilejeunea sulphurea*). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Taxilejeunea sulphurea*). CARTAGO: Jiménez cantón, Peijivalle, *Standley 46908* (**Herzog 1951** as *Taxilejeunea sulphurea*; **Morales 1991** as *Taxilejeunea sulphurea*; **Dauphin 2005** as *Taxilejeunea sulphurea*). LIMÓN: Pococí cantón, Guápiles, 300–500 m, *Standley 37100a* (**Herzog 1951** as *Taxilejeunea sulphurea*; **Morales 1991** as *Taxilejeunea sulphurea*; **Dauphin 2005** as *Taxilejeunea sulphurea*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Taxilejeunea sulphurea*). SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51875a* (**Herzog 1951** as *Taxilejeunea sulphurea*; **Morales 1991** as *Taxilejeunea sulphurea*; **Dauphin 2005** as *Taxilejeunea sulphurea*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000–1,270 m, *Salazar Allen et al. 666* (PMA, **Stotler et al. 1998** as *Taxilejeunea sulphurea*); Gualaca distrito, Hornito, Fortuna, *Gradstein 9774* (GOET, **Stotler et al. 1998** as *Taxilejeunea sulphurea*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34458* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34487/A*, *34500* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34548/B*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34731*, *34736/B*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34203/A*, *34213* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, Sendero de Interpretación, 1 km E del campamento de los guardabosques del INRENARE, 8°40′N, 79°55′W, 800–900 m, 7 Apr 1989, *Lara et al. 1459* (PMA, **Dauphin et al. 2006** as *Taxilejeunea 'sulfurea'*). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34310/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lejeunea talamancensis M.E.Reiner et Schäf.-Verw., *Nova Hedwigia* 87(3/4): 414, 2008 (Reiner-Drehwald and Schäfer-Verwimp 2008). Holotype: Costa Rica, San José, Cordillera de Talamanca, San Gerardo de Dota, path from Chacon to "Las Cruces" on river Savegre, epiphyte on *Alnus* sp., 1,900 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV /H-0098/B* (JE, isotype GOET, CR).

COSTA RICA. S. loc. (von Konrat et al. 2010). SAN JOSÉ: Dota cantón, San Gerardo, path from Chacon to "Las Cruces" on river Savegre, 1,900 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0098b* (JE, GOET, CR, **TYPE, Reiner-Drehwald and Schäfer-Verwimp 2008**); Dota cantón, San Gerardo, path from Chacon to waterfall on river Savegre, *Schäfer-Verwimp & Holz SV/H-0075a* (JE, CR, **Reiner-Drehwald and Schäfer-Verwimp 2008**).

Not found outside Central America.

Lejeunea tamasii M.E.Reiner, N.Salazar Allen et C.Chung, *Polish Bot. J.* 58(2): 420, 2013 (Reiner-Drehwald et al. 2013). Holotype: Panama, Panamá West, Isla Barro Colorado, Zona del Canal, 9°10′N, 79°50′W, camino R. Shannon, sobre roca, 200 m desde la Quebrada Shannon, 4 Mar 1987, *N. Salazar Allen 4281* (PMA, isotype GOET-013749 https://plants.jstor.org/stable/10.5555/al.ap.specimen.goet013749?searchUri=filter%3Dname%26so%3Dps_group_by_genus_species%2Basc%26Query%3DLejeunea%2Btamasii).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15075* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, 9°10′N, 79°50′W, Camino J. Van Tyne 13, sobre piedra en quebrada seca, 25 Mar 1987, *Salazar Allen & Chung 4583* (PMA,

GOET, **Reiner-Drehwald et al. 2013**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, 9°10′N, 79°50′W, Camino J. Van Tyne 9, 25 Mar 1987, *Salazar Allen & Chung 4623* (PMA, GOET, **Reiner-Drehwald et al. 2013**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, 9°10′N, 79°50′W, camino R. Shannon, 200 m desde la Quebrada Shannon, 4 Mar 1987, *Salazar Allen 4281* (PMA, GOET, **TYPE**; **Reiner-Drehwald et al. 2013**; **Söderström et al. 2016b**; **Dauphin et al. 2022**).

Not found outside Central America.

Lejeunea tenera (Sw.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 406, 1845 (Gottsche et al. 1845a).

≡*Jungermannia tenera* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

≡*Neopotamolejeunea tenera* (Sw.) M.E.Reiner, *Nova Hedwigia* 71(3/4): 456, 2000 (Reiner-Drehwald 2000b).

GUATEMALA. S. loc. (Gradstein and Reiner-Drehwald 2007). ALTA VERAPAZ: S. loc., 5 Apr 1892, *Türckheim* (NY, BM, W, **Reiner-Drehwald 2000b** as *Neopotamolejeunea tenera*).

Also reported from Mexico, the Caribbean, Brazil.

Lejeunea tonduzana (Steph.) M.E.Reiner, *Polish Bot. J.* 58(2): 421, 2013 (Reiner-Drehwald et al. 2013).

≡*Hygrolejeunea tonduzana* Steph., *Hedwigia* 35(3): 105, 1896 (Stephani 1896). Lectotype (Bonner 1966 and Söderström et al. 2023a: 151): Costa Rica, Rio Naranjo, 200–250 m, Mar 1893, *A. Tonduz s.n., Vetter 3077a* (G-00280785 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=318288&lang=en).

=*Taxilejeunea tonduzana* Steph., *Sp. Hepat. (Stephani)* 5: 498, 1914 (Stephani 1914), syn. fide Gradstein (2021). Lectotype (Söderström et al. 2023a: 156): Costa Rica, forêts du Rio Naranjo, Mar 1893, *Tonduz 15614* (G-00113325 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147603&lang=en, isolectotypes NY-1059616 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1199910, JE-04002537 https://je.jacq.org/JE04002537).

≡*Schusteria tonduzana* (Steph.) Kachroo, *Bryologist* 60: 273, 1957 (Kachroo 1957).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/6/d/6*, *B/6/d/7* (**Winkler 1967** as *Hygrolejeunea tonduzana*).

COSTA RICA. S. loc. (**Stephani 1914** as *Taxilejeunea tonduzana*; Winkler 1967 as *Hygrolejeunea tonduzana*; **Fulford and Sharp 1990** as *Taxilejeunea tonduzana*; **Geissler and Bischler 1990** as *Taxilejeunea tonduzana* and also as *Schusteria tonduzana*; Reiner-Drehwald 2015; Gradstein 2021). CARTAGO: Jiménez cantón, Rio Naranjo (Stephani 1914 as *Hygrolejeunea tonduzana*); Jiménez cantón, Río Naranjo, *Vetter 3077a* (G, **TYPE** of *Hygrolejeunea tonduzana*, **Morales 1991** as *Hygrolejeunea tonduzana*); Jiménez cantón, Río Naranjo, 1893, *Tonduz* (G, **Morales 1991** as *Hygrolejeunea tonduzana*); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15614* (G https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147603&lang=en, **TYPE** of *Taxilejeunea tonduzana*, **Bischler 1966** as *Taxilejeunea tonduzana*); Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz 3077a* (G-11832, JE, **Stephani 1896** as *Hygrolejeunea tonduzana*; **Bonner 1966** as *Hygrolejeunea tonduzana*; **Reiner-Drehwald et al. 2013**).

Also reported from Mexico.

Lejeunea trinitensis Lindenb., *Syn. Hepat.* 3: 381, 1845 (Gottsche et al. 1845a). Type: Trinidad, var. ***trinitensis***.

≡*Stylolejeunea trinitensis* (Lindenb.) Fulford, *Mem. New York Bot. Gard.* 45: 277, 1987 (Fulford 1987).

=*Lejeunea pililoba* Spruce, *J. Linn. Soc., Bot.* 30(210): 346, 1895 (Gepp 1895), syn. fide Grolle (1981). Type: Dominica.

≡*Cheilolejeunea pililoba* (Spruce) A.Evans, *Mem. Torrey Bot. Club* 8(2): 147, 1902 (Evans 1902b).

≡*Rectolejeunea pililoba* (Spruce) R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 1153, 1980 (Schuster 1980d).

BELIZE. CAYO: Blue Hole National Park, 100–200 m, 1996, *Eggers & Timm BEZ 3/16*, det. Eggers (**Eggers et al. 2004**).

HONDURAS. S. loc. (Schuster 1980d also as *Rectolejeunea pililoba* var. *pililoba*; Fulford and Sharp 1990 as *Stylolejeunea trinitensis*; Oliveira-e-Silva and Yano 2000 as *Rectolejeunea pililoba*; Bastos 2004; Stotler and Crandall-Stotler 2017). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55177*, *55361*, *55370*, *55543*, *55562* (**Herzog 1951** as *Cheilolejeunea pililoba*).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/8/1* (**Winkler 1967** as *Cheilolejeunea pililoba*).

Also reported from Western Indian Ocean, Indo-China, Malesia, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lejeunea trinitensis var. ***varians*** (Herzog) B.Cañiza, *Lindbergia* 46 (e25016): 1, 2023 (Cañiza et al. 2023).

≡*Cheilolejeunea pililoba* f. *varians* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 167, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 6): Honduras, Atlántida, Lancetilla Valley near Tela, *Standley 55577* (JE-04010835 https://je.jacq.org/JE04010835).

≡*Rectolejeunea pililoba* var. *varians* (Herzog) R.M.Schust., *Hepat. Anthocer. N. Amer.* 4: 1156, 1980 (Schuster 1980d).

HONDURAS. ATLANTÍDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55577 p.p.* (JE-04010855, **TYPE** of *Cheilolejeunea pililoba* f. *varians*, **Herzog 1951** as *Cheilolejeunea pililoba* f. *varians*; **Reiner-Drehwald and Grolle 2012** as *Rectolejeunea pililoba* var. *trinitensis*).

Only known from Central America.

Lejeunea urbanii (Steph.) Steph., *Sp. Hepat. (Stephani)* 5: 766, 1915 (Stephani 1915).

≡*Eulejeunea urbanii* Steph., *Hedwigia* 27(11/12): 301, 1888 (Stephani 1888b). Type: Dominican Republic.

PANAMA. S. loc., 1906, *Hélion* (PC, **Bischler 1966**).

Also reported from the Caribbean.

Lejeunea venezuelana (R.M.Schust.) R.L.Zhu et W.Ye, *J. Syst. Evol.* 51(4): 473, 2013 (Ye et al. 2013).

≡*Cyrtolejeunea venezuelana* R.M.Schust., *Phytologia* 39(6): 426, 1978 (Schuster 1978b). Type: Venezuela.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,340 m, *Schäfer-Verwimp & Verwimp 34335/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, El Volcán, 8°46.9′N, 82°38.8′W, 1,410 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34653/C* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34634/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34664/A*, *34676/C* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America(?).

Lepicolea Dumort., *Recueil Observ. Jungerm.*: 20, 1835 (Dumortier 1835).

Lepicolea ochroleuca (Spreng.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 345, 1885 (Spruce 1885).

≡*Jungermannia ochroleuca* Spreng. *Syst. Veg. (ed. 16) [Sprengel]* 4(2): 325, 1827 (Sprengel 1827a).

GUATEMALA. S. loc. (Hässel and Solari 1975, 1985; Fulford and Sharp 1990). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 398* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PROGRESO: Volcán Santa Luisa, *Steyermark 43528* (F, **Fulford 1963a**; **Freire 2006**; **Pérez 2009**). QUICHÉ: S. loc., *Pérez 2342* (USCG, Pérez 2009).

HONDURAS. S. loc. (Hässel and Solari 1975; Gradstein et al. 1983; Hässel and Solari 1985; Fulford and Sharp 1990; Váňa and Engel 2013). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, 1,600–1,800 m, *Standley 705*, *721*, *8040 p.p.* (F, **Fulford 1963a**).

COSTA RICA. S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110407* (UC, **Norris et al. 2017**). PUNTARENAS: Buenos Aires cantón, Valle del Silencio, *Quesada 1181* (CR, **Dauphin 2005**); Coto Brus cantón, Cordillera de Talamanca, Cerro Echandi at border with Panama, *Dauphin 92* (USJ, **Gradstein et al. 1994**; **Kappelle 1996**); Coto Brus cantón, Parque Internacional La Amistad, Cerro Echandi, *Dauphin et al. 92* (**Dauphin 2005**).

Also reported from Southern Africa, New Zealand(?), Mexico, Western South America, Brazil, Southern South America, Subantarctic Islands.

Lepicolea pruinosa (Taylor) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 345, 1885 (Spruce 1885).

≡*Sendtnera pruinosa* Taylor, *London J. Bot.* 5: 373, 1846 (Taylor 1846a). Type: Ecuador.

=*Lepicolea pruinosa* f. *laxior-complanata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 30, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, southern slope of Volcán de Turrialba, near the Finca del Volcán de Turrialba, altitude about 2,000–2,400 m, on tree, 22 Feb 1924, *Standley 35251* (US-04667893 http://n2t.net/ark:/65665/375528b99-38a4-4f54-9efe-d16813bb8345).

=*Lepicolea pruinosa* f. *longissime-lacinulata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 30, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, near Finca La Cima, above Los Lotes, north of El Copey, Provincia de San José, altitude 2,100–2,400 m, 21–22 Dec 1925, *Standley 42694* (US-04667894 http://n2t.net/ark:/65665/39483be51-0872-4455-aa45-2778147d6aa1); Cerro de las Caricias, north of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 11 Mar 1926, *Standley 52170* (US-04667892 http://n2t.net/ark:/65665/38028a4be-639f-49d2-8468-1f181a4df8b3).

=*Lepicolea pruinosa* f. *spinuloso-lacinulata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 30, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Cerro de las Vueltas, Provincia de San José, altitude 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley & Valerio 43846* (US-04667897 http://n2t.net/ark:/65665/3d5128609-69ec-4483-aea1-49bd0818e220, F-C0000175F https://collections-botany.fieldmuseum.org/catalogue/1767029).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 4180* (U, **Kappelle 1996**); S. loc. (Fulford 1963a; Cole 1982, 1983; Gradstein 1999a, 2021; Schuster 2000c; Gradstein et al. 2001b; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp et al. 2013). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35251* (**Herzog 1938** as *Lepicolea pruinosa* f. *laxior-complanata*; **Geissler and Bischler 1985** as *Lepicolea pruinosa* f. *laxior-complanata*; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35296* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52170* (**Herzog 1938** as *Lepicolea pruinosa* f. *longissime-lacinulata*; **Geissler and Bischler 1985** as *Lepicolea pruinosa* f. *longissime-lacinulata*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51590* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Checo Trail near Adono clearing, 3 Aug 1968, *James, W.* (US, R, **Reed and Robinson 1971**). SAN JOSÉ: Coto Brus cantón, Pittier, *Dauphin 1604.2* (CR, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43846* (**Herzog 1938** as *Lepicolea pruinosa* f. *spinuloso-lacinulata*; **Geissler and Bischler 1985** as *Lepicolea pruinosa* f. *spinuloso-lacinulata*; **Morales 1991**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43918* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**); Dota cantón, Finca La Cima, above Los Lotes, N of El Copey, 2,100–2,400 m, *Standley 42594* (F, **Herzog 1938** as *Lepicolea pruinosa* f. *longissime-lacinulata*; **Fulford 1963a**; **Geissler**

and Bischler 1985 as *Lepicolea pruinosa* f. *longissime-lacinulata*; **Morales 1991**; **Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro Buena Vista, *Schäfer-Verwimp 184* (CR, **Dauphin 2005**); Pérez Zeledón cantón, Chirripó National Park, Camino de Los Indios, *Kappelle & Monge 5587* (B, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Cerro Hornitos, *Mori & Bolten 7458* (MO, PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Tierras Altas distrito, Cerro Punta, *Mori & Bolten 7312* (MO, PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3490* (ABSH, **Stotler et al. 1998**).

Also reported from Mexico(?), Northern South America, Western South America, Southern South America.

Lepicolea ramentifissa Herzog, *Biblioth. Bot.* 88: 30, 1921 (Herzog 1920). Type: Bolivia.

COSTA RICA. S. loc. (Cole 1982, 1983; Schuster 2000c; Schäfer-Verwimp et al. 2013). HEREDIA: Zurquí, 2,000–2,400 m, *Standley 50643* (B-04991, **Herzog 1938**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: San Isidro cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48227* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Lepidolejeunea R.M.Schust., *Beih. Nova Hedwigia* 9: 139, 1963 (Schuster 1963b).

Lepidolejeunea cordifissa (Taylor) M.E.Reiner, *Nova Hedwigia* 83(3/4): 478, 2006 (Reiner-Drehwald 2006).

≡*Lejeunea cordifissa* Taylor, *London J. Bot.* 5: 395, 1846 (Taylor 1846a). Type: Ecuador.

≡*Hygrolejeunea cordifissa* (Taylor) Steph., *Sp. Hepat. (Stephani)* 5: 544, 1914 (Stephani 1914).

=*Kingiolejeunea ornata* H.Rob., *Bryologist* 70(1): 53, 1967 (Robinson 1967), syn. fide Reiner-Drehwald (2006). Type: Colombia.

≡*Lepidolejeunea ornata* (H.Rob.) R.M.Schust., *Phytologia* 45(5): 425, 1980 (Schuster 1980b).

GUATEMALA. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Lepidolejeunea ornata*).

COSTA RICA. S. loc. (Gradstein and Costa 2003 as *Lepidolejeunea ornata*; Lavocat Bernard et al. 2009 as *Lepidolejeunea ornata*; Gradstein and Uribe 2016; Gradstein 2021); S. loc., *Schäfer-Verwimp & Holz SV/H-0284/A* (JE, **Heinrichs et al. 2015**; **Schäfer-Verwimp et al. 2017**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Zhu and Shu 2018**). GUANACASTE: Tilarán cantón, Los Ayotes, 600–700 m, *Standley 45459 p.p.* (**Herzog 1951** as *Hygrolejeunea cordifissa*; **Morales 1991** as *Hygrolejeunea cordifissa*; **Reiner-Drehwald 2006**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 94-31* (hb. Lücking, **Lücking 1995** as *Lepidolejeunea ornata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lepidolejeunea ornata*). PUNTARENAS: Golfito cantón, Corcovado National Park, Esquinas, *Soto 4170 p.p.* (U, USJ, **Gradstein et al. 1994** as *Lepidolejeunea ornata*; **Dauphin 2005** as *Lepidolejeunea ornata*). SAN JOSÉ: Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36212a*, *36319* (**Herzog 1951** as *Hygrolejeunea cordifissa*; **Morales 1991** as *Hygrolejeunea cordifissa*; **Reiner-Drehwald 2006**).

PANAMA. S. loc., *Seemann* (BM, NY, **Thiers 1986** as *Lejeunea cordifissa*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 521*, *601*, *647*, *etc.* (PMA, **Stotler et al. 1998** as *Hygrolejeunea cordifissa* and *Lepidolejeunea ornata*). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 698* (PMA, **Sierra et al. 2019a**).

COCOS I. Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 459*, *461*, *462*, *617* (USJ, ULM, **Bernecker-Lücking 2000** as *Lepidolejeunea ornata*); Fila después de Mirador a Bahia Wafer, 500 m, 15 Feb 1994, *Dauphin A-7* (USJ, **Dauphin 1995**, **1999**, **2005**, all as *Lepidolejeunea ornata*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lepidolejeunea cuspidata (Gottsche) Heinrichs et Schäf.-Verw., *Taxon* 64(2): 224, 2015 (Heinrichs et al. 2015).

≡*Lejeunea cuspidata* Gottsche, *Syn. Hepat.* 3: 351, 1845 (Gottsche et al. 1845a). Type: St. Kitts.

=*Hygrolejeunea punctata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 163, 1951 (Herzog 1951), syn. fide Heinrichs et al. (2015). Lectotype (Heinrichs et al. 2015: 224): Costa Rica, Heredia, Cerros de Zurquí, 2,000–2,400 m, 3 Mar 1926, *Standley 50640/a* (=JE-04002098 https://je.jacq.org/JE04002098, isolectotypes JE-04002096 https://je.jacq.org/JE04002096, JE-04002097 https://je.jacq.org/JE04002097).

≡*Lepidolejeunea punctata* (Herzog) R.M.Schust., *Beih. Nova Hedwigia* 9: 139, 1963 (Schuster 1963b).

≡*Harpalejeunea punctata* (Herzog) S.W.Arnell, *Svensk Bot. Tidskr.* 59: 75, 1965 (Arnell 1965).

COSTA RICA. S. loc. (Arnell 1965 as *Harpalejeunea punctata*; Cole 1982, 1983, both as *Hygrolejeunea punctata*; Ellis et al. 2021); S. loc., *Dauphin & Morales* (GOET, **Schäfer-Verwimp et al. 2017**). HEREDIA: San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 3 Jan 1926, *Standley 50640a* (JE-04002098, **TYPE** of *Hygrolejeunea punctata*, **Herzog 1951** as *Hygrolejeunea punctata*; **Bischler 1966** as *Lepidolejeunea punctata*; **Bonner 1966** as

Hygrolejeunea punctata; **Heinrichs et al. 2015**). PUNTARENAS: S. loc., 2,400 m, *Dauphin & Morales* (GOET, **Heinrichs et al. 2015**); Monteverde, *James* (F, **Robinson 1967** as *Hygrolejeunea punctata*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 76* (R, MO-6163171, **Reed and Robinson 1971** as *Hygrolejeunea punctata*).

PANAMA. S. loc. (Ellis et al. 2021). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/F* (JE, **Schäfer-Verwimp 2014** as *Lepidolejeunea punctata*). VERAGUAS: S. loc., 865 m, *Schäfer-Verwimp & Verwimp 30835* (JE, **Heinrichs et al. 2015**; **Schäfer-Verwimp et al. 2017**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lepidolejeunea grossepapulosa (Steph.) Piippo, *Acta Bot. Fenn.* 132: 49, 1986 (Piippo 1986).

≡*Prionolejeunea grossepapulosa* Steph., *Sp. Hepat. (Stephani)* 5: 220, 1913 (Stephani 1913). Type: Guadeloupe.

?BELIZE. ?ORANGE WALK: Rio Bravo Reserve, 1996, *Eggers & Timm BEZ 4/14* (Eggers et al. 2004 as *Lepidolejeunea* cf. *grossepapulosa*). Note: We are not aware of any positively identified specimen from Belize.

PANAMA. COCLÉ: La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,200 m, *Salazar Allen & Villarreal 19031* (PMA, **Dauphin et al. 2006**).

Also reported from the Caribbean, Western South America.

Lepidolejeunea involuta (Gottsche) Grolle, *J. Hattori Bot. Lab.* 55: 504, 1984 (Grolle 1984a).

≡*Lejeunea involuta* Gottsche, *Syn. Hepat.* 3: 350, 1845 (Gottsche et al. 1845a). Type: St. Vincent.

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004**).

***HONDURAS.** *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 1,500 m, 18 Mar 1993, *Allen 14058 p.p.*, det. Dauphin May 2017 (MO-6699933! http://tropicos.org/specimen/100988545, **this publication**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Montecristo, Los Planes, 2,030 m, 12 Nov 2014, *Búcaro H307*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Reiner-Drehwald 1995b; Ilkiu-Borges 2000; Bastos 2004). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 27 Apr–9 May 2007, *Norris 110185* (UC, **Norris et al. 2017**). CARTAGO: Jiménez cantón, Juan Viñas, 1895, *Sarg* (G-10310, PC, **Piippo 1986**). HEREDIA: San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 3 Jan 1926, *Standley 50640a* (JE-04002098, **Grolle 1984a**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**; Dauphin 2005); S. loc., 125 m, *Gradstein & Dauphin 9347* (GOET, **Heinrichs et al. 2015**; **Schäfer-Verwimp et al. 2017**). Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, Jun 1962, *James*, det. Dauphin Jun 2017 (MO-6169959!, **this publication**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 76* (R, MO-6163171, **Dauphin 2005**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**). SAN JOSÉ: Acosta cantón, El Cornelio, 1,350 m, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp 2014). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34464* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34497/E* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,630 m, *Schäfer-Verwimp & Verwimp 34412* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34263/A* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9281* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, *Lara 1462* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Standley, 2003, *Dauphin 3120* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30833/B* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995); Cerro Pelón, 5°32′57″N, 87°03′56″W, 480 m, 15 Feb 1994, *Dauphin 992* (CR, USJ, **Dauphin 1995**, **1999**, **2005**); Yglesias E, 500–634 m, Apr 1992, *Lücking 606* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Southwestern Pacific, Northwestern Pacific, Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lepidolejeunea sullivantii (Gottsche) M.E.Reiner, *Nova Hedwigia* 83(3/4): 479, 2006 (Reiner-Drehwald 2006).

≡*Lejeunea sullivantii* Gottsche, *Mexik. Leverm.*: 196, 1863 (Gottsche 1863). Type: Venezuela.

=*Lejeunea spongia* Spruce, *J. Bot.* 14: 132, 1876 (Spruce 1876c), syn. fide Reiner-Drehwald (2006). Type: Ecuador.

≡*Lepidolejeunea spongia* (Spruce) B.M.Thiers, *Brittonia* 34(3): 295, 1982 (Thiers 1982).

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Lucas 20* (UC, **Norris et al. 2017** as *Lepidolejeunea spongia*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

***Lepidozia* Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).**

Lepidozia armata Steph., *Sp. Hepat. (Stephani)* 3: 567, 1909 (Stephani 1909b). Lectotype: Venezuela.

=*Lepidozia karstenii* Steph., *Sp. Hepat.* 3: 576, 1909 (Stephani 1909b), syn. fide Fulford (1966). Type: Mexico.

=*Lepidozia karstenii* var. *standleyi* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 22, 1939 (Herzog 1938), syn. fide Fulford (1966). Lectotype (Fulford 1966: 201, supplemented by Söderström et al. 2023a: 152): Costa Rica, San Jose: Las Nubes, 1,500–1,600 m, *Standley 38735*, Verdoorn, Hep. Select. & Crit. 375 (BR-5040110401156 (https://www.botanicalcollections.be/specimen/BR5040110401156, isolectotypes C, F https://collections-botany.fieldmuseum.org/catalogue/2130884).

≡*Lepidozia standleyi* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 22, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 36.1(b); publ. in syn.).

=*Lepidozia karstenii* f. *angustisecta* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 22, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Zurquí, Prov. S. José, 2,000–2,500 m, on tree, *Standley 48173* (JE-04002072 https://je.jacq.org/JE04002072), *48194/a* (JE-04002066 https://je.jacq.org/JE04002066); Cerro de Las Caricias, Prov. de Heredia, 2,000–2,400 m, on tree, *Standley 52001* (JE-04002067 https://je.jacq.org/JE04002067); Cerros de Zurquí de Heredia, 2,000–2,400 m, on tree, *Standley 50512* (US-04666846 http://n2t.net/ark:/65665/33f5090e7-f130-4285-9896-e5c90be44755), *50518* (JE-04002070 https://je.jacq.org/JE04002070); La Palma. Prov. S. José, 1,600 m, wet bank, in large soft cushions, *Standley 32968* (JE-04002074 https://je.jacq.org/JE04002074, US-04666849 http://n2t.net/ark:/65665/38b75a1e4-69ef-4944-bf2a-56db37824e97).

=*Lepidozia karstenii* f. *brevifissa* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 22, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: Cerro de Las Lajas, *Standley* 51540 (JE-04002069 https://je.jacq.org/JE04002069); Zurquí, Prov. S. José, 2,000–2,500 m, *Standley 48214* (JE-04002071 https://je.jacq.org/JE04002071).

=*Lepidozia armata* f. *cavifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 22, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica: La Palma, Prov. S. José, 1,600 m, *Standley* 38028 (US-04666740 http://n2t.net/ark:/65665/34b01b86a-ac96-40f0-983e-9a6c979de560), La Palma, Prov. S. José, 1,600 m, on tree, *Standley 38144* (US-04666735 http://n2t.net/ark:/65665/370ad1b67-60f0-4f87-9c37-eede4b820892).

GUATEMALA. S. loc. (Fulford and Sharp 1990); S. loc., *Türckheim 5581* (FH, **Fulford 1966**; **Freire 2006**); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, Verdoorn 1935 as *Lepidozia karstenii* var. *standleyi*; **Geissler and Bischler 1985** as *Lepidozia karstenii* var. *standleyi*); S. loc., 3,800 ft (1,158 m), *Türckheim* (NY Bryo. Levier 5084, M, **Herzog 1938** as *Lepidozia karstenii*). ALTA VERAPAZ: S. loc., *Steyermark 90413* (F, Pérez 2009); Tactic municipio, near Tactic, 1,400–1,500 m, *Standley 90413* (F, **Fulford 1966**; **Freire 2006**). BAJA VERAPAZ: S. loc., *Sharp 5172* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). HUEHUETENANGO: Cerro Chiblac, between Finca San Rafael and Ixcan, Sierra de los Cuchumatanes, 1,200–2,000 m, *Steyermark 49172D* (F-C0047048F https://collections-botany.fieldmuseum.org/catalogue/4071586, **Fulford 1966**; **Freire 2006**); N of Barillas, *Steyermark 48796* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). ZACAPA: Sierra de Las Minas, summit, 2,500 m, *Steyermark 29898* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**); upper Río Sitio Nuevo, *Steyermark 43202* (F, **Fulford 1966**; **Freire 2006**).

HONDURAS. S. loc. (Fulford and Sharp 1990). COMAYAGUA: Siguatepeque, 1,080–1,400 m, *Standley 56194 p.p.* (F, **Fulford 1966**).

COSTA RICA. S. loc. (Cole 1982, 1983; **Geissler and Bischler 1985** as *Lepidozia karstenii* var. *standleyi*; Fulford and Sharp 1990); S. loc., *Brenes 11207*, *11689*, *Gutiérrez 186* (F, **Fulford 1966**); S. loc., *Motelay* (G, **Stephani 1909b**; **Fulford 1966**; **Geissler and Bischler 1985**); Cordillera de Talamanca, *Kappelle 5516* (U, **Kappelle 1996** as *Lepidozia armata* f. *cavifolia*). ALAJUELA: San Ramón cantón, El Silencio, *Brenes 17117 p.p.* (F, **Fulford 1966**; **Dauphin 2005**); San Ramón cantón, Los Ángeles, *Brenes 16262* (F, **Fulford 1966**; **Dauphin 2005**). CARTAGO: Alto de La Estrella, *Standley 39061* (**Herzog 1938** as *Lepidozia karstenii* var. *standleyi*; **Morales 1991**; **Dauphin 2005**); El Guarco cantón, Santa Clara, *Torres 220 p.p.*, *234* (F, **Fulford 1966**); La Union cantón, Cerro de La Carpintera, *Little 5579* (hb. Little, **Fulford 1966**); Paraíso cantón, Orosi, *Standley 39823* (**Herzog 1938**; **Taylor 1960**; **Morales 1991**; **Dauphin 2005**); Sierra de Talamanca, S of Cartago, 7,238 ft (2,206 m), *Little 5602* (hb. Little, **Fulford 1966**). HEREDIA: Barva cantón, Cerro Gallito, 2,000 m, *Valerio 13* (**Herzog 1938** as *Lepidozia karstenii* f. *brevifissa*; **Morales 1991**; **Dauphin 2005**); Barva cantón, road near Volcán Barba, 1,600–1,950 m, *Maxon & Harvey 8470a* (US, **Fulford 1966**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52101*, *52166*, det. Herzog (B-19554, JE, US, **Taylor 1960**; **Dauphin 2005**); San Isidro cantón, Cerro de las Caricias y Zurquí, 2,000–2,400 m, *Standley 50512*, *50518*, *52001*, det. Herzog (**Herzog 1938** as *Lepidozia karstenii* and *Lepidozia karstenii* f. *angustisecta*; **Taylor 1960** also as *Lepidozia karstenii* f. *angustisecta*; **Geissler and Bischler 1985** as *Lepidozia karstenii* f. *angustisecta*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51432* (**Herzog 1938** as *Lepidozia karstenii* var. *standleyi*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51540* (**Herzog 1938** as *Lepidozia karstenii* f. *brevifissa*; **Geissler and Bischler 1985** as *Lepidozia*

karstenii f. *brevifissa*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, *Standley 51586* (B-19553, **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50696*, det. Herzog (**Herzog 1938** as *Lepidozia karstenii* f. *brevifissa*; **Taylor 1960** as *Lepidozia karstenii* f. *brevifissa*; **Geissler and Bischler 1985** as *Lepidozia karstenii* f. *brevifissa*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49108*, *51504*, det. Herzog (**Herzog 1938**; **Taylor 1960**). LIMÓN: La Asunción, Río Banano, *Gutiérrez 186 p.p.*, *187 p.p.*, *200 p.p.* (F, **Fulford 1966**; Dauphin 2005). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Cerro Vueltas, 3,000 ft (914 m), 1969, *Gómez-Pignataro 2117* (R, **Reed and Robinson 1971**); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Reed and Robinson 1971**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-31*, *1969-107* (R, **Reed and Robinson 1971**). SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48173*, *48194a* (**Herzog 1938** as *Lepidozia karstenii* and *Lepidozia karstenii* f. *angustisecta*; **Taylor 1960** as *Lepidozia karstenii* f. *angustisecta*; **Geissler and Bischler 1985** as *Lepidozia karstenii* f. *angustisecta*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48204*, *48281* (B-19552, **Herzog 1938**; **Taylor 1960**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48214* (**Herzog 1938** as *Lepidozia karstenii* f. *brevifissa*; **Geissler and Bischler 1985** as *Lepidozia karstenii* f. *brevifissa*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37652* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51802*, *51828*, det. Herzog (**Taylor 1960**); Moravia cantón, La Palma, 1,600 m, *Standley 32968*, *38028*, *38144* (**Herzog 1938** also as *Lepidozia karstenii* f. *angustisecta* and *Lepidozia armata* f. *cavifolia*; **Taylor 1960**; **Geissler and Bischler 1985** as *Lepidozia karstenii* f. *angustisecta* and *Lepidozia armata* f. *cavifolia*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,469 m, *Tonduz 2945* (G, **Fulford 1966**); Moravia cantón, La Palma, *Valerio 20*, det. Herzog as *Lepidozia karstenii* Steph. (CR, B-19594, **Herzog 1938** as *Lepidozia karstenii* var. *standleyi*; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,600 m, *Standley 38735* (BR, C, F, **TYPE** of *Lepidozia karstenii* var. *standleyi*, **Herzog 1938** as *Lepidozia karstenii* var. *standleyi*; **Taylor 1960** also as *Lepidozia karstenii* var. *standleyi*; **Fulford 1966**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, *Verdoorn 375* (**Dauphin 2005**).

PANAMA. S. loc. (Fulford and Sharp 1990); S. loc., 1906, *Hélion* (PC, **Stephani 1909b**; **Fulford 1966**; **Stotler et al. 1998**); S. loc., 1907, *Hélion* (NY, **Geissler and Bischler 1985**). CHIRIQUÍ: S. loc., *Hélion* (G-00069229, **Fulford 1966**; **Stotler et al. 1998**); Tierras Altas distrito, Las Nubes, *Croat 26467* (MO, **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, Cerro Tute, *Mori et al. 7602* (MO, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Lepidozia brasiliensis Steph., *Sp. Hepat. (Stephani)* 3: 571, 1909 (Stephani 1909b). Type: Brazil.

=*Lepidozia moritziana* Steph., *Sp. Hepat. (Stephani)* 3: 575, 1909 (Stephani 1909b), syn. fide Fulford (1966). Type: Colombia, Venezuela.

***GUATEMALA.** *CHIMALTENANGO: Los Calderos, 1,800–2,100 m, 22 Nov 1938, *Standley 57823*, det. Dauphin 2017 (MO-6096017! http://tropicos.org/specimen/90093915, **this publication**).

COSTA RICA. S. loc. (Fulford 1966; Cole 1982, 1983). ALAJUELA: Poás Volcano, *Morales & Canessa 429* (USJ, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 11 Jun 1972, *Morales 429* (**Morales and Griffin 1983**). *GUANACASTE: Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, 28 Oct 1990, *Chavez 379a*, det. Dauphin May 2017 (MO-5280475!, **this publication**). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 50021* (**Herzog 1938** as *Lepidozia moritziana*; **Taylor 1960**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-33a* (US, MO-6096017, **Reed and Robinson 1971**). SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48281*, det. Herzog (**Herzog 1938** as *Lepidozia moritziana*; **Taylor 1960**; **Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Gualaca distrito, Cerro Hornitos, *Mori & Bolten 7456* (MO, **Stotler et al. 1998**). ?NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 280* (PMA, Dauphin 2007 as *Lepidozia brasiliensis?*). Note: We are not aware of any positively identified specimen from Naso Tjër Di comarca.

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Lepidozia cupressina (Sw.) Lindenb., *Syn. Hepat.* 2: 207, 1845 (Gottsche et al. 1845b) subsp. ***cupressina***.

≡*Jungermannia cupressina* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

=*Lepidozia caespitosa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 362, 1885 (Spruce 1885), syn. fide Gradstein (2021). Type: Ecuador.

=*Lepidozia wallisiana* Steph., *Sp. Hepat. (Stephani)* 3: 573, 1909 (Stephani 1909b) '*wallisana*', syn. fide Pócs (1984a). Type: Colombia.

=*Lepidozia muenchiana* Steph., *Sp. Hepat. (Stephani)* 3: 578, 1909 (Stephani 1909b), syn. fide Pócs (1984a). Type: Mexico.

GUATEMALA. S. loc. (Fulford 1967 as *Lepidozia caespitosa*; Gradstein et al. 1977 as *Lepidozia caespitosa*; Fulford and Sharp 1990 also as *Lepidozia caespitosa*, *Lepidozia muenchiana*, and *Lepidozia wallisiana*; Dauphin et al. 1998 as *Lepidozia 'wallisana'*; León et al. 1998 as *Lepidozia wallisiana*). ALTA VERAPAZ: S. loc., *Standley 91601* (F, **Fulford 1966**; **Freire 2006**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 387* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PROGRESO: Between Calera and summit of Volcán Siglo, 2,200–3,300 m, *Steyermark 43124* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**); Finca Bucaral, 6,200 ft (1,890 m), *Sharp 2733*, *2736 p.p.* (TENN, **Fulford 1966** as *Lepidozia muenchiana*; **Pérez 2009** as *Lepidozia 'münchiana'*); Sierra de Las Minas, 2,500 m, *Steyermark 29828*

(F, **Fulford 1966** as *Lepidozia muenchiana*); Volcán Santa Luisa, 2,400–3,333 m, *Steyermark 43527 p.p.* (F, **Fulford 1966** as *Lepidozia caespitosa*; **Freire 2006** as *Lepidozia caespitosa*; **Pérez 2009** as *Lepidozia caespitosa*). HUEHUETENANGO: Above Macx, 2,500–3,000 m, *Steyermark 51899* (F, **Fulford 1966** as *Lepidozia muenchiana*; **Pérez 2009** as *Lepidozia 'münchiana'*); Puente Alto, 7,700 ft (2,347 m), *Sharp 4903 p.p.* (TENN, **Fulford 1966** as *Lepidozia muenchiana*); Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2006, *Pérez et al. 1236* (USCG, Pérez 2009). JALAPA: Jalapa municipio, Volcán Jumay, 1,300–2,200 m, *Steyermark 32491* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). *QUETZALTENANGO: Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′4.0″N, 91°28′35.8″W, 2 Jan 2006, *Quedensley 3831*, det. Dauphin Sep 2017 (MO, W-0089073!, **this publication**). ZACAPA: Sierra Virgen, 2,200–2,400 m, *Steyermark 42621* (F, **Fulford 1966** as *Lepidozia muenchiana*; **Pérez 2009** as *Lepidozia 'münchiana'*); Volcán Gemelos, 2,100–3,200 m, *Steyermark 43291 p.p.* (F, **Fulford 1966** as *Lepidozia 'wallisana'*; **Pérez 2009** as *Lepidozia wallisiana*).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15114*, *15257* (BRH, MO, **Whittemore and Allen 1996** as *Lepidozia muenchiana*).

HONDURAS. S. loc. (Fulford and Sharp 1990 also as *Lepidozia caespitosa*, *Lepidozia muenchiana*, and *Lepidozia caespitosa*). COMAYAGUA: Siguatepeque municipio, El Achote, *Yuncker 6583*, *6615 p.p.* (DPU, **Fulford 1966** as *Lepidozia caespitosa*). FRANCISCO MORAZÁN: S. loc., 1,600–1,800 m, *Standley 8023 p.p.* (F, **Fulford 1966** as *Lepidozia caespitosa*); San Antonio de Oriente municipio, Cerro de Uyuca, 1,620–1,800 m, *Standley et al. 8023 p.p.* (F, **Fulford 1966**).

EL SALVADOR. S. loc. (Fulford 1967 as *Lepidozia caespitosa*; Fulford and Sharp 1990 as *Lepidozia caespitosa*). SANTA ANA: Above Hacienda Los Planos, *Carlson 961b* (hb. Carlson, **Fulford 1966** as *Lepidozia caespitosa*).

COSTA RICA. S. loc. (Fulford 1967 as *Lepidozia caespitosa*; Cole 1982, 1983, both as *Lepidozia 'wallisana,' Lepidozia caespitosa*, and *Lepidozia 'munchiana;'* Fulford and Sharp 1990 as *Lepidozia caespitosa* and *Lepidozia muenchiana*; **Gradstein 1993**; Gradstein and Holz 2005); S. loc., *Endre* (G, **Fulford 1966** as *Lepidozia caespitosa*; **Morales 1991** as *Lepidozia caespitosa*; **Dauphin 2005** as *Lepidozia caespitosa*); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 4617c* (U, **Kappelle 1996**). ALAJUELA: San Ramón cantón, Cerro Azahar, 1,400–1,500 m, *Liesner et al. 15627*, det. Gradstein (B-273998, EGR, U, **Dauphin 2005**; **Pócs et al. 2016**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 109986* (UC, **Norris et al. 2017** as *Lepidozia caespitosa*); San Ramón cantón, Los Ángeles, *Brenes 14859 p.p.* (F, **Fulford 1966** as *Lepidozia muenchiana*; **Morales 1991** as *Lepidozia muenchiana*; **Dauphin 2005** as *Lepidozia muenchiana*); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**). CARTAGO: El Guarco cantón, La Chonta, *Mata 33* (USJ, **Dauphin 2005**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Griffin et al. D248*, *D257* (FLAS, USJ, **Morales 1991**; **Dauphin 2005**). LIMÓN: Talamanca cantón, Cordillera de Talamanca, Parque Internacional La Amistad, Cerro Kámuk, 3,550 m, *Quesada 1381* (CR, USJ, **Dauphin et al. 1998** as *Lepidozia 'wallisana;'* **Dauphin 2005** as *Lepidozia 'wallisana'*). PUNTARENAS: S. loc. (**Merwin et al. 2001** also as *Lepidozia muenchiana*); Monteverde, <1,500 m (Dauphin 2005 also as *Lepidozia muenchiana*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** also as *Lepidozia muenchiana*). SAN JOSÉ: S. loc. (Markham and Fernández 2021); Cerro Zurquí, *Dodge 6074 p.p.* (NY, **Fulford 1966** as *Lepidozia caespitosa*; **Morales 1991** as *Lepidozia caespitosa*; **Dauphin 2005** as *Lepidozia caespitosa*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, El Empalme, 1,475–2,400 m, *Lems 5147* (NY, **Fulford 1966** as *Lepidozia muenchiana*; **Kappelle 1996** as *Lepidozia muenchiana*; **Morales 1991** as *Lepidozia muenchiana*; **Dauphin 2005** as *Lepidozia muenchiana*); Dota cantón, El Jardín, *Morales 301* (FLAS, USJ, **Morales 1991**; **Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Chirripó National Park, upper Río Talari Valley, 1,400–3,000 m, *Kuhbier 557*, det. Grolle (B-225751, **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 1999a). †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This must refer to the "new" comarca Naso Tjër Di. CHIRIQUÍ: Boquete distrito, along Boquete trail to Paso Respingo, 2,000–2,500 m, *Gentry 6042* (MO, PMA, **Stotler et al. 1998** as *Lepidozia muenchiana*); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,440 m, *Schäfer-Verwimp & Verwimp 34383* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Cerro Punta, *Croat 26374* (MO, **Stotler et al. 1998** as *Lepidozia muenchiana*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: Summit of Pirre Massif, 1,200–1,350 m, *Allen 8852* (MO, **Stotler et al. 1998** as *Lepidozia muenchiana*). NASO TJËR DI COMARCA: Cerro Fábrega, 11 Mar 2003, *De Gracia 228* (PMA, **Dauphin 2007** as *Lepidozia muenchiana*); Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1580* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Indian Subcontinent(?), Malesia(?), Australia(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands, Antarctic Continent.

Lepidozia dendritica Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 362, 1885 (Spruce 1885). Type: Ecuador.

=*Lepidozia peruviensis* Steph., *Sp. Hepat. (Stephani)* 3: 575, 1909 (Stephani 1909b), syn. fide Gradstein (2021). Type: Peru.

COSTA RICA. ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Lepidozia peruviensis*); Poás Volcano, *Griffin & Eakin 30*, det. Breil (FLAS, **Morales 1991** as *Lepidozia peruviensis*; **Dauphin 2005** as *Lepidozia peruviensis*); Poás Volcano, Aug 1977, *Griffin et al. 59*, det. Breil (FLAS-020497, **Morales and Griffin 1983** as *Lepidozia peruviensis*, **Morales 1991** as *Lepidozia peruviensis*; **Dauphin 2005** as *Lepidozia peruviensis*).

Also reported from Northern South America, Western South America, Brazil.

Lepidozia inaequalis (Lehm. et Lindenb.) Lehm. et Lindenb., *Syn. Hepat.* 2: 209, 1845 (Gottsche et al. 1845b).

≡*Jungermannia inaequalis* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 1, 1833 (Lehmann 1833). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Western South America, Brazil.

Lepidozia incurvata Lindenb., *Syn. Hepat.* 2: 203, 1845 (Gottsche et al. 1845b). Type: Colombia.

GUATEMALA. S. loc. (Schäfer-Verwimp 1996). QUETZALTENANGO: San Carlos Sija municipio, Gatena area, N of Sija, *Sharp 2260 p.p.* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). QUICHÉ: Between Chajul and Nebaj, *Sharp 5306 p.p.* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**).

COSTA RICA. S. loc. (Cole 1982, 1983; Schäfer-Verwimp 1996); Cordillera de Talamanca, *Kappelle 5777a* (U, **Kappelle 1996**). ALAJUELA: Poás cantón, upper slope between the hotel and the crater, *Standley 34861* (?=*34681*), det. Herzog (B-19589!, **Herzog 1938**; **Taylor 1960**; **Dauphin 2005**); Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás Volcano, *Griffin & Araya 38*, *Griffin & Eakin 18*, *40*, *82*, *149*, *172* (**Morales 1991**; **Dauphin 2005**); Poás Volcano, *Morales & Canessa 442* (USJ, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 10 Jun 1968, *Morales & Canessa 442* (**Morales and Griffin 1983**); Poás Volcano, Aug 1977, *Griffin et al. 74* (USJ, FLAS-019998, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); San Ramón, *Brenes 16206* (C, F, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Sierra de Talamanca, S of Cartago, *Little 5630 p.p.* (hb. Little, **Fulford 1966**). HEREDIA: Barva cantón, Bosques entre el Volcán Barva y Carrizal, 2800, *Pittier 6011* (BR, **Stephani 1893c**; **Taylor 1960**; **Fulford 1966**; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, La Palma, *Standley 16217 p.p.* (F, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38458* (**Herzog 1938**; **Taylor 1960**).

Also reported from Northern South America, Western South America, Brazil.

Lepidozia macrocolea Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 363, 1885 (Spruce 1885).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**).

Also reported from Mexico(?), the Caribbean(?), Northern South America, Western South America, Brazil.

Lepidozia patens Lindenb., *Syn. Hepat.* 2: 202, 1845 (Gottsche et al. 1845b). Type: Antilles.

=*Lepidozia commutata* Steph., *Hedwigia* 27(11/12): 293, 1888 (Stephani 1888a), syn. fide Fulford (1966). Type: Puerto Rico.

GUATEMALA. S. loc. (Fulford 1967, 1987; Fulford et al. 1970; Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 223*, *339* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ZACAPA: Faldas del Volcán Gemelos, *Steyermark 58926* (F, **Freire 2006**); Volcán Gemelos, *Steyermark 43291* (F, **Fulford 1966**; **Pérez 2009**).

COSTA RICA. S. loc. (Pagán 1942b as *Lepidozia commutata*; Schäfer-Verwimp and Pócs 2009); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). HEREDIA: San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51436*, *51513*, *51631*, det. Herzog (**Herzog 1938** as *Lepidozia commutata*; **Taylor 1960**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, *Standley 51518* (B-19573, **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50393*, det. Herzog (**Herzog 1938** as *Lepidozia commutata*; **Taylor 1960**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, *James, W. 24076* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-12* (US, **Reed and Robinson 1971**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, *Dauphin 3401* (CR, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34221* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9282* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, *Spörle 0.6* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Panamá distrito, Cerro Jefe,

forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen et al. 5221* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Lepidozia pinnaticruris Spruce ex Steph., *Sp. Hepat. (Stephani)* 3: 579, 1909 (Stephani 1909b). Type: Ecuador.

?COSTA RICA. S. loc. (Cole 1983; Schuster 2000c; Gradstein and Uribe 2016). Note: We are not aware of any firsthand report from mainland Costa Rica and think the reports refer to Cocos I.

COCOS I. S. loc., *Holdridge 5184* (NY, **Fulford 1966**).

Also reported from Northern South America, Western South America.

Lepidozia reptans (L.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

≡*Jungermannia reptans* L., *Sp. Pl.* 1: 1133, 1753 (Linnaeus 1753). Type: Europe.

=*Lepidozia macropatens* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 20, 1939 (Herzog 1938), syn. fide Fulford (1966). Lectotype (Söderström and Hentschel 2023: 11): Costa Rica: Cerro de Las Vueltas, Prov. S. José, 2,700–3,000 m, on tree, *Standley 43723* (JE-04002087 https://je.jacq.org/JE04002087, isolectotype US-00289481 http://n2t.net/ark:/65665/3f0f8ebad-c8b4-4953-9a47-20a1f36bbbc9).

GUATEMALA. S. loc. (Fulford 1987; Gradstein and Váňa 1987; Fulford and Sharp 1990; Sharma and Srivastava 1993). EL PROGRESO: Between Calera and summit of Volcán Siglo, 2,000–3,000 m, *Steyermark 43057* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). HUEHUETENANGO: Below Nucá, 7,400 ft (2,256 m), *Sharp 4934 p.p.* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). JALAPA: Jalapa municipio, Mount Miramundo, summit, 2,000–2,500 m, *Steyermark 32771 p.p.* (F, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). QUETZALTENANGO: Above Chiquival, 7,500 ft (2,286 m), *Sharp 2024*, *2081 p.p.*, *2136*, *2143*, *2144*, *2161* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**); San Carlos Sija municipio, Cerro de Sija, 9,900 ft (3,018 m), *Sharp 5065 p.p.* (TENN, **Fulford 1966**; **Freire 2006**). SAN MARCOS: Tajamulco municipio, Volcán Tajumulco, 10,200 ft (3,109 m), *Sharp 5400 p.p.* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**). TOTONICAPÁN: S. loc., 10,500 ft (3,200 m), *Sharp 2613* (TENN, **Fulford 1966**; **Freire 2006**; **Pérez 2009**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 2,100 m, 31 Jul 1977, *Croat 42497 p.p.*, det. Dauphin May 2017 (MO-6699944! http://tropicos.org/specimen/100988162, **this publication**).

***NICARAGUA.** *ESTELÍ: Estelí municipio, Cerro Quiabú (Cerro Las Brisas), 13°06′N, 86°25′W, 1,550–1,600 m, 24 Nov 1979, *Stevens & Grijalva 16191 p.p.*, det. Dauphin May 2017 (MO-6699900! http://tropicos.org/specimen/100988685, **this publication**).

COSTA RICA. S. loc. (Fulford 1987; Gradstein and Váňa 1987; Fulford and Sharp 1990; Sharma and Srivastava 1993). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás Volcano, *Griffin & Eakin 47* (FLAS, USJ, **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 47* (**Morales and Griffin 1983**). CARTAGO: Paraíso cantón, La Georgina, *Bowers 675d* (**Morales 1991**); Páramo Buenavista, *Dauphin 2914* (NY, **Dauphin 2005**); Pococí cantón, La Georgina, *Bowers 675d* (**Dauphin 2005**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Laguna Jilgueros, *Dauphin 1865* (CR, **Dauphin 2005**). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723* (hb. Herzog, **TYPE** of *Lepidozia macropatens*, **Herzog 1938** as *Lepidozia macropatens*; **Fulford 1966**; **Geissler and Bischler 1985** as *Lepidozia macropatens*; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, West-Central Tropical Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lepidozia squarrosa Steph., *Sp. Hepat. (Stephani)* 3: 573, 1909 (Stephani 1909b). Lectotype (Fulford 1966: 189): Costa Rica, s. loc., *Tonduz*. hb. Boissier 2945 (G-00069674 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=123599&lang=en).

=*Lepidozia costaricensis* Steph., *Sp. Hepat. (Stephani)* 3: 573, 1909 (Stephani 1909b), syn. fide Fulford (1966). Lectotype (Fulford 1966: 189) if not holotype: Costa Rica, somet volcan Poas, 2,644 m, *Pittier 2945* (G-00069622 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=123263&lang=en).

=*Lepidozia durandii* Steph., *Sp. Hepat. (Stephani)* 3: 568, 1909 (Stephani 1909b), syn. fide Fulford (1966). Lectotype (Fulford 1966: 189): Costa Rica, summit of Volcán de Poas, 2,644 m, *Pittier 6017* (G-00060920 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=116138&lang=en).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Monte Cristo, ~14 mi NE of Metapán, 2,100 m, 31 Jul 1977, *Croat 42495*, det. Dauphin 2017 (MO-5228832! http://tropicos.org/specimen/100990948, **this publication**).

COSTA RICA. S. loc. (**Stephani 1909b** as *Lepidozia costaricensis*; **Geissler and Bischler 1985** as *Lepidozia costaricensis* and *Lepidozia durandii*; Schäfer-Verwimp et al. 2013; Gradstein and Uribe 2016; Gradstein 2021); S. loc., *Pittier* (G, **Stephani 1909b** as *Lepidozia durandii*); S. loc., *Tonduz 2945 p.p.* (G, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**); S. loc., *Tonduz 2945* (G-00069674, **TYPE**, **Taylor 1960**; **Fulford 1966**; **Morales 1991**; **Dauphin 2005**); S. loc., *Tonduz* (**Stephani 1909b** also as *Lepidozia durandii*; **Geissler and Bischler 1985**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA:

S. loc., *Pittier 2944* (**Morales and Griffin 1983** as *Lepidozia durandii*); Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás Volcano, *Griffin & Eakin 157*, det. Breil (FLAS, **Morales 1991**; **Dauphin 2005**); Poás Volcano, *Standley 49150* (**Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1978, *Griffin et al. 157* (FLAS-020496, **Morales and Griffin 1983**); Poás Volcano, summit, 2,644 m, *Pittier 6017* (G-00060920 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=116138&lang=en, **TYPE** of *Lepidozia durandii*, **Taylor 1960** as *Lepidozia durandii*; **Morales 1991**; **Dauphin 2005**); Poás Volcano, summit, 2,644 m, *Pittier 2945* (G-00069622 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=123263&lang=en, **TYPE** of *Lepidozia costaricensis*, **Taylor 1960** as *Lepidozia costaricensis*); San Ramon cantón, La Palma, *Brenes 19020* (F, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**); San Ramón cantón, San Pedro, *Brenes 19133* (F, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**). CARTAGO: La Union cantón, Cerro de La Carpintera, *Little 5667* (hb. Little, **Fulford 1966**); Sierra de Talamanca, S of Cartago, 7,238 ft (2,206 m), *Little 5618* (hb. Little, **Fulford 1966**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49150*, det. Herzog (B-19580, **Herzog 1938** as *Lepidozia durandii*; **Taylor 1960** as *Lepidozia durandii*; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, south of El Empalme, *Little 5631 p.p.*, *5633* (hb. Little, **Fulford 1966**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 2021). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 248* (PMA, **Dauphin 2007**); Cerro Fábrega, *De Gracia 255* (PMA, **Dauphin 2007**).

Also reported from Northern South America, Western South America.

Lepidozia subdichotoma Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 361, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. S. loc. (Gradstein and León-Yánez 2011; Gradstein 2021). ALAJUELA: Poás National Park, *Arndt 1782* (**Dauphin 2005**); Poás Volcano, *Morales 1782* (USJ, **Morales 1991**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 2461* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad Caribe, Cerro Bekom, 2,780 m, *Quesada 1367* (CR, **Dauphin 2005**).

PANAMA. VERAGUAS: Santa Fe distrito, Alto de Piedra, 1,600 m, *Toribio*, det. J. Gudiño and G. Dauphin (PMA, **Dauphin 2007**).

Also reported from Northern South America, Western South America.

***Leptolejeunea* (Spruce) Steph., *Hedwigia* 30(6): 270, 1891 (Stephani 1891b).**

Leptolejeunea convexistipa Bischl., *Nova Hedwigia* 17: 325, 1969 (Bischler 1969). Type: Brazil.

=*Leptolejeunea mexicana* Bischl., *Nova Hedwigia* 17: 321, 1969, syn. with *Leptolejeunea maculata* s. lat. in Grolle (1976) but type is from the Neotropics. Type: "Patria ignota."

?COSTA RICA. S. loc. (Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016; Sierra et al. 2019b). ?LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-493* (hb. Lücking, Lücking 1995 as *Leptolejeunea* cf. *convexistipa*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (Lücking 1997 as *Leptolejeunea* cf. *convexistipa*). Note: We are not aware of any positively identified specimen from Costa Rica.

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016; Sierra et al. 2019b); S. loc., *Schäfer-Verwimp & Verwimp 30937/A* (hb. Schäfer-Verwimp, **Bechteler et al. 2016b**; **Shu and Zhu 2019**; **Shu et al. 2022**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 662*, *668*, *etc.* (PMA, **Sierra et al. 2019a**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30861* (JE, **Heinrichs et al. 2014a**, **2014b**; **Schäfer-Verwimp 2014**; **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a**, **2016b**, **2016c**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Zhu and Shu 2018**; **Shu and Zhu 2019**; **Shu et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Leptolejeunea elliptica (Lehm. et Lindenb.) Besch., *Rev. Bryol.* 19(1): 14, 1892 (Bescherelle 1892).

≡*Jungermannia elliptica* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 13, 1833 (Lehmann 1833). Type: Surinam.

≡*Lejeunea elliptica* (Lehm. et Lindenb.) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 14: 335, 1840 (Montagne 1840).

=*Jungermannia elliptica* var. *laxa* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 13, 1833 (Lehmann 1833), syn. in Bischler (1969). Type: Mexico.

≡*Lejeunea elliptica β laxa* (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 404, 1845 (Gottsche et al. 1845a).

GUATEMALA. S. loc. (Schuster 1980d as *Leptolejeunea elliptica* subsp. *elliptica*; Miller et al. 1983; Fulford and Sharp 1990; Lücking 1995; Ilkiu-Borges 2000; Oliveira-e-Silva and Yano 2000; Bastos 2004). ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 101*, *465*, *526* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la

Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: S. loc., *Pérez 1415* (USCG, Pérez 2009). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Los Amates municipio, near Quiriguá, 72–150 m, 26–29 Apr 1939, *Standley 72517*, *72521* (FH, NY, US, **Bischler 1969**); Puerto Barrios, ~0 m, 25 Apr–6 May 1939, *Standley 73102* (FH, NY, **Bischler 1969**). QUICHÉ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). SAN MARCOS: Rio Ixpal, below Rodeo, 750 m, 14 Mar 1939, *Standley 68728* (FH, NY, **Bischler 1969**).

BELIZE. CAYO: Blue Hole National Park, 100 m, 1996, *Eggers BEZ 3/6*, *4/10* (**O'Shea et al. 1997**); Mountain Pine Ridge, Cave Rio Frio, 600 m, 1996, *Eggers BEZ 2/32* (**O'Shea et al. 1997**). STANN CREEK: Cockscombe Reserve (hb. Eggers, **O'Shea et al. 1997**).

HONDURAS. S. loc. (Schuster 1980d as *Leptolejeunea elliptica* subsp. *elliptica*; Miller et al. 1983; Fulford and Sharp 1990; Lücking 1995; Ilkiu-Borges 2000; Oliveira-e-Silva and Yano 2000; Bastos 2004); S. loc., 1903, *Wilson 602* (NY, YU, **Bischler 1969**). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 54654*, *54803*, *54860*, *etc.* (FH, F, M, JE, US, **Zwickel 1932**; **Herzog 1951**; **Bischler 1969**). CORTÉS: N of Lake Yojoa, 600–900 m, 1951, *Morton 7880d* (US, **Bischler 1969**); San Francisco de Yojoa municipio, along Rio Lindo, N of Lake Yojoa, 500–600 m, 9–12 Apr 1951, *Morton 7664d*, *7879b* (US, **Bischler 1969**).

COSTA RICA. S. loc. (Schuster 1980d as *Leptolejeunea elliptica* subsp. *elliptica*; Miller et al. 1983; Schuster 1983a; Fulford and Sharp 1990; Ilkiu-Borges 2000; Oliveira-e-Silva and Yano 2000; Bastos 2004; **Lücking et al. 2010**). CARTAGO: Jiménez cantón, Río Naranjo, 1893, *Tonduz* (G, **Morales 1991**; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15571* (M, YU, NY, **Bischler 1969**; **Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz* (B, M, **Bischler 1969**); Turrialba cantón, Vallée de Tuis, bassin de Reventazón, 600 m, Sep 1893, *Tonduz 15592*, *15593* (G, **Bischler 1969**; **Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*). GUANACASTE: Caribbean slope N of Tenorio, 500 m, 3 Feb 1985, *Eggers CR 3/49* (**Eggers et al. 2001**); Liberia cantón, Rincón de la Vieja National Park, Hacienda Santamaría, *Dauphin 2335* (CR, **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*). HEREDIA: Sarapiquí cantón, La Selva, *Cordero & Morales 2243* (**Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*). LIMÓN: Guácimo cantón, Jalova, southern border of the Tortuguero National Park, 2 m, 19 Feb 1985, *Eggers CR 12/7* (**Eggers et al. 2001**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-4*, *92-338* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, 45 m, *Egremy 325*, det. Dauphin (CR, **Dauphin 2005**); Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11224a*, det. Dauphin Jun 2017 (MO-6690027!, **this publication**). PUNTARENAS: Buenos Aires cantón, Boruca, Jul 1891, *Tonduz 15585* (G, **Bischler 1969**; **Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*); Buenos Aires cantón, Boruca, Jul 1891, *Tonduz 15587* (G, **Bischler 1969**); Buenos Aires cantón, Cobagra, Mar 1892, *Tonduz 15570* (G, **Bischler 1969**; **Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); Osa cantón, Santo Domingo de Golfo Dulce, Mar 1896, *Tonduz 15598* (G, **Bischler 1969**; **Morales 1991** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin 2005** as *Leptolejeunea elliptica* subsp. *elliptica*).

PANAMA. S. loc. (**Lehmann 1833** as *Jungermannia elliptica* var. *laxa*; **Gottsche et al. 1845a** as *Lejeunea elliptica laxa*; Schuster 1980d as *Leptolejeunea elliptica* subsp. *elliptica*; Miller et al. 1983; Fulford and Sharp 1990; Lücking 1995; Stotler et al. 1998 as *Leptolejeunea elliptica* subsp. *elliptica*; Ilkiu-Borges 2000; Oliveira-e-Silva and Yano 2000; Bastos 2004); S. loc., *Presl. 6853* (W, **Stephani 1890c** as *Lejeunea elliptica*); S. loc., 1832 (S-PA, W 6853, **Bischler 1969**; **Stotler et al. 1998** as *Leptolejeunea elliptica* subsp. *elliptica*). BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño & Salazar Allen 3364*, *3396*, det. Gudiño Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Salt Creek, Aug 2017, *Dauphin et al. 4628* (PMA, **this publication**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). COCLÉ: La Pintada distrito, El Copé, *Meijer 165* (PMA, **Stotler et al. 1998** as *Leptolejeunea elliptica* subsp. *elliptica*). *COLÓN: Colón distrito, W arm of Quebrada Salamanca, 16 Dec 1934, *Dodge 17011*, det. Dauphin Jun 2017 (MO-5243759!, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Leptolejeunea elliptica* subsp. *elliptica*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15113* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, *Salazar Allen et al. 5965* (PMA, **Stotler et al. 1998**

as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–145 m, Aug 2016–Jan 2017, *Rodríguez-Castro* (**Rodríguez-Castro and Flores 2021**); La Chorrera distrito, Barro Colorado Island, Camino Wetmore 21, *Salazar Allen et al. 5943* (PMA, **Stotler et al. 1998** as *Leptolejeunea elliptica* subsp. *elliptica*); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado Island, Zetek 15, 2003, *Dauphin 3223* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, on Zetek, *Salazar Allen et al. 5890*, *5906*, *5922* (PMA, **Stotler et al. 1998** as *Leptolejeunea elliptica* subsp. *elliptica*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3062 p.p.*, *3063* (CR, PMA, **Dauphin et al. 2022**). PANAMA: Panamá distrito, between Madden Dam and Saddle II near Alahuela, 25 Nov 1934, *Dodge et al. 16517*, det. Dauphin Jun 2017 (MO-5243755!, **this publication**); Panamá distrito, Canal Zone Forest Preserve, Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998** as *Leptolejeunea elliptica* subsp. *elliptica*). VERAGUAS: Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Ensenada Santa Cruz, río arriba por el margen derecho, 7°36′29.0′N, 81°45′48.0″W, 1995–1996, *Aranda 2473* (MA, PMA, **Salazar Allen and Chung 1997a**).

COCOS I. S. loc. (Dauphin 1995, 1999, 2005 as *Leptolejeunea elliptica* subsp. *elliptica*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 460*, *462*, *463* (USJ, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 320*, *636* (ULM, USJ, **Bernecker-Lücking 2000**); Wafer Bay, Mar 1970, *Gómez-Pignataro 3286A*, det. Dauphin Jun 2017 (F!, **this publication**); Yglesias A, 50–100 m, Apr 1992, *Lücking 697* (USJ, **Bernecker-Lücking 2000**); Yglesias D, 350–500 m, Apr 1992, *Lücking 582* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific(?), Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Leptolejeunea exocellata (Spruce) A.Evans, *Bull. Torrey Bot. Club* 29(8): 498, 1902 (Evans 1902c).

≡*Lejeunea exocellata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 195, 1884 (Spruce 1884). Type: Peru.

GUATEMALA. S. loc. (Fulford and Sharp 1990; Bastos 2004). ALTA VERAPAZ: Cobán, 1,260–1,440 m, 26 Mar–15 Apr 1939, *Standley 69517* (NY, FH, **Bischler 1969**); E of Tactic Road to Tamakú, 1,500–1,650 m, 9 Apr 1939, *Standley 71308* (NY, **Bischler 1969**); San Pedro Carchá municipio, NE of Carchá, 1,200 m, 2 Apr 1939, *Standley 70330*, *70331* (NY, **Bischler 1969**); SE of Taché, 1,500 m, 30 Mar 1939, *Standley 69997* (FH, NY, **Bischler 1969**); vicinity PF Laguna Sapalá, 1 mi SW of Sibidé, 280 m, 11 Mar 1942, *Steyermark 44933b* (US, **Bischler 1969**). SAN MARCOS: Rio Ixpal, below Rodea, 750 m, 14 Mar 1939, *Standley 68728* (FH, NY, **Bischler 1969**).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Bastos 2004). PUNTARENAS: Buenos Aires cantón, Boruca, *Standley 25691* (JE, PC, **Zwickel 1932**; **Bischler 1966**, **1969**); Buenos Aires cantón, Boruca, Jul 1891, *Tonduz 15584*, *15585*, *15586*, *15587* (G, NY, M, **Bischler 1969**; **Morales 1991**; **Dauphin 2005**); Buenos Aires cantón, Boruca, Las Cascadas Plantation, near summit, 2 Jul 1923, *Standley 25691* (JE, P, US, **Bischler 1969**; **Morales 1991**; **Stotler et al. 1998**; **Dauphin 2005**).

PANAMA. S. loc. (Fulford and Sharp 1990; Bastos 2004). COLÓN: Colón distrito, Fort Sherman, 15 Jan 1924, *Standley 31004* (S, US, **Zwickel 1932**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Marino 14*, *25* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3167* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 10*, *12*, *13*, *28*, *30* (PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**); La Chorrera distrito, Barro Colorado, Fuertes Cove, 2003, *Dauphin 3109* (CR, PMA, **Dauphin et al. 2022**).

***COCOS I.** S. loc., Jun 2016, *Sánchez 2758*, det. Dauphin 2016 (CR-283717!, **this publication**); Fila entre Bahía Wafer y Chatham, sobre ladera que va hacia Bahía Weston, 5°32′54.8″N, 87°03′11.4″W, 216 m, *Estrada et al. 6139*, det. G. Dauphin Jul 2021 (CR-4468343!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Leptolejeunea jamaicensis R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 83(4): 229, 1967 (Schuster 1967). Type: Jamaica.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, old dining hall, 2003, *Dauphin 3211* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3062 p.p.* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3051* (CR, PMA, **Dauphin et al. 2022**).

Also reported from the Caribbean, Western South America, Brazil.

Leptolejeunea maculata (Mitt.) Schiffn., *Consp. Hepat. Arch. Ind.*: 275, 1898 (Schiffner 1898a).

≡*Lejeunea maculata* Mitt., *J. Proc. Linn. Soc., Bot.* 5(18): 118, 1861 (Mitten 1860a). Type: Sri Lanka.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013). *ALAJUELA: San Ramon cantón, La Palma, 12 Nov 1920, *Brenes 168a*, det. Dauphin May 2017 (MO-5217026!, **this publication**). LIMÓN: Pococí cantón, Cariari, El Carmen, Estación Biológica El Zota, 10°34′N, 83°45′W, 45 m, *Egremy 325*, det. Dauphin (CR, **Dauphin 2005**).

***PANAMA.** *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N,

82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4638*, det. Dauphin Aug 2017 (PMA, **this publication**).

***COCOS I.** Cuenca alta del Rio Yglesias, 368 m, Jun 2016, *Sánchez et al. 2754*, det. Dauphin 2016 (CR-283709!, **this publication**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific.

Leptolejeunea moniliata Steph., *Sp. Hepat. (Stephani)* 5: 371, 1913 (Stephani 1913). Type: Surinam.

=*Leptolejeunea chrysophthalma* Herzog, *Hedwigia* 71(6): 344, 1932 (Herzog 1931), syn. fide Bischler (1969). Type: Brazil, Venezuela.

GUATEMALA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Schäfer-Verwimp and Reiner-Drehwald 2009). ALTA VERAPAZ: Cobán, 1,550 m, Sep 1906, *Türckheim 5077* (BM, G, NY, **Bischler 1969**); Santa María Cahabón municipio, Secanquin, 550 m, 7 Jan 1905, *Maxon & Hay 3211a* (YU, **Bischler 1969**).

BELIZE. STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/21* (hb. Eggers, **O'Shea et al. 1997**).

HONDURAS. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Schäfer-Verwimp and Reiner-Drehwald 2009). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 27 Jul 1927–Mar 1928, *Standley 54900* (JE, **Herzog 1951** as *Leptolejeunea chrysophthalma*; **Bischler 1969**).

COSTA RICA. S. loc. (Fulford and Sharp 1990; Oliveira-e-Silva and Yano 2000; Schäfer-Verwimp and Reiner-Drehwald 2009); S. loc., *Tonduz 15571c* (M, **Zwickel 1932** as *Leptolejeunea chrysophthalma*). CARTAGO: Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15571* (M, YU, NY, **Bischler 1969**; **Morales 1991**; **Dauphin 2005**).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Salazar Allen et al. 5965* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 10* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Brazil.

Leptolejeunea obfuscata (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 373, 1913 (Stephani 1913).

≡*Lejeunea obfuscata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 579, 1885 (Spruce 1885). Type: Brazil.

BELIZE. CAYO: Mountain Pine Ridge, Cave Rio Frio, ~600 m, 1996, *Eggers & Timm BEZ 2/44*, det. Eggers (**Eggers et al. 2004**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Leptolejeunea radicosa (Nees ex Mont.) Grolle, *J. Hattori Bot. Lab.* 45: 178, 1979 (Grolle 1979a).

≡*Lejeunea radicosa* Nees ex Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 475, 1842 (Montagne 1842b). Lectotype: French Guiana.

=*Leptolejeunea obovata* Bischl., *Nova Hedwigia* 17: 319, 1969 (Bischler 1969), syn. fide Grolle (1979a). Type: Jamaica.

BELIZE. S. loc. (Eggers et al. 2004; Schäfer-Verwimp 2014). STANN CREEK: Cockscombe Reserve, 1996, *Eggers BEZ 5/20* (hb. Eggers, **O'Shea et al. 1997**).

COSTA RICA. S. loc. (Dauphin et al. 1998; Schäfer-Verwimp 1999; Eggers et al. 2004; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Reiner-Drehwald 2009; Schäfer-Verwimp 2014). CARTAGO: Paraíso cantón, Jardín Lankester, *Morales 2276*, det. Morales (USJ, **Morales 1991** as *Leptolejeunea obovata*; **Dauphin 2005**); Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/28* (**Eggers et al. 2001** as *Leptolejeunea obovata*). HEREDIA: Sarapiquí cantón, La Selva Biological Station, *Arroyo-Rodríguez* (**Arroyo-Rodriguez et al. 2007** as *Leptolejeunea obovata*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-64*, *92-132*, *92-133*, *92-445* (hb. Lücking, **Lücking 1995** as *Leptolejeunea obovata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Nationales Refugium Golfito, 50 m, Sep 1991, *Lücking 91-126* (hb. Lücking, **Lücking 1995** as *Leptolejeunea obovata*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

PANAMA. S. loc. (Lücking 1995 as *Leptolejeunea obovata*; Dauphin et al. 1998; Schäfer-Verwimp 1999; Linares and Uribe 2002; Eggers et al. 2004; Lavocat Bernard et al. 2009; Schäfer-Verwimp and Reiner-Drehwald 2009); S. loc., *Schäfer-Verwimp & Verwimp 30766* (JE, **Heinrichs et al. 2014a, 2014b**; **Shu et al. 2022**); S. loc., *Schäfer-Verwimp & Verwimp 30795* (hb. Schäfer-Verwimp, **Bechteler et al. 2016b**; **Shu and Zhu 2019**; **Shu et al. 2022**); Canal Zone (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30766* (JE, **Schäfer-Verwimp 2014**). COLÓN: Colón distrito, Fort Sherman, 15 Jan 1924, *Standley 31004* (S, US, **Bischler 1969** as *Leptolejeunea obovata*; **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen s.n.* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020** as *Leptolejeunea obovata*); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 10*, *12*, *13*, *14*, *25*, *28*, *30* (PMA, **Stotler et al. 1998**).

COCOS I. S. loc. (Dauphin 1995, 1999); Yglesias A, 50–100 m, Apr 1992, *Lücking 554*, *561*, *566*, *650* (ULM, USJ, **Bernecker-Lücking 2000**).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Leptolejeunea serratifolia Schiffn., *Bot. Jahrb. Syst.* 23(5): 594, 1897 (Schiffner 1897). Type: Cuba.

*HONDURAS. *ATLÁNTIDA: El Porvenir municipio, Parque Nacional Pico Bonito, desde la quebrada Zacate al límite zona núcleo punto 54, 15°40′N, 86°55′W, 200–400 m, 29 Dec 2001, *Dauphin & Ferrufino 3050.1*, det. Dauphin Dec 2020 (CR-5152107!, **this publication**).

COSTA RICA. PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

***COCOS I.** Cuenca de la Quebrada Pittier, rumbo a Bahía Yglesias, 5°31′81.5″N, 87°03′32.3″W, 285 m, 29 Nov 2013, *Estrada et al. 6164*, det. G. Dauphin Jun 2021 (CR-4468353!, **this publication**).

Also reported from the Caribbean, Western South America, Brazil.

Leptoscyphus Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851).

Leptoscyphus amphibolius (Nees) Grolle, *Nova Acta Leop.*, n.s., 25(161): 54, 1963 (Grolle 1962a).

≡*Jungermannia amphibolia* Nees, *Fl. Bras. (Martius)* 1(1): 334, 1833 (Nees 1833b). Type: Brazil.

=*Chiloscyphus pittieri* Steph., *Prim. Fl. Cost.*: 112, 1893 (Stephani 1893c), syn. fide Grolle (1962a). Lectotype (Grolle 1962a: 57 as "holotypus"): Costa Rica, entre la Lagune de Barba et le Carrisel, 2,800 m, Jan 1889, *Pittier 6014* (G-00069439 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115868&lang=en, isolectotypes JE-04002039 https://je.jacq.org/JE04002039, JE-04002038 https://je.jacq.org/JE04002038).

≡*Heteroscyphus pittieri* (Steph.) Schiffn., Österr. *Bot. Z.* 60(5): 172, 1910 (Schiffner 1910).

=*Lophocolea aberrans* Lindenb. et Gottsche var. *costaricensis* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 17, 1939 (Herzog 1938), syn. fide Grolle (1962a). Lectotype (Söderström and Hentschel 2023: 12): Costa Rica, Cerro de las Vueltas, Provincia de San José, on old log, altitude 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley & Valerio 43758* (JE-04002012 https://je.jacq.org/JE04002012, isolectotypes JE-04002011 https://je.jacq.org/JE04002011, US-04628457 http://n2t.net/ark:/65665/331215e63-87b4-4a33-a9f3-8e3c14753ea1).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Freire et al. 2012). ALTA VERAPAZ: S. loc., *Pérez 2326* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 517* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: S. loc., *Steyermark 43026* (F, **Fulford 1976**; **Freire 2006**; **Pérez 2009**); Finca Bucaral, 6,200 ft (1,890 m), *Sharp 2733* (TENN, **Fulford 1976**; **Freire 2006**); Finca Bucaral, *Sharp 2738 p.p.* (TENN, **Fulford 1976**; **Freire 2006**); San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: S. loc., *Sharp 4955 p.p.* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**); above Macx, Sierra de los Cuchumatanes, 2,500–3,000 m, *Steyermark 51899 p.p.* (F, **Fulford 1976**; **Freire 2006**); between Yulhitz and Maxbal, 1,400–1,500 m, *Standley 48691* (F, **Fulford 1976**; **Freire 2006**); San Juan Ixcoy municipio, above San Juan Ixcoy, *Steyermark 50011 p.p.* (F, **Fulford 1976**; **Freire 2006**). QUETZALTENANGO: A lo largo del Rio Repallal, *Steyermark 34907* (F, **Freire 2006**); above Chiquival, *Sharp 2145* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**); along Río Repallal, *Steyermark 29882*, *42536* (F, **Fulford 1976**; **Freire 2006**); Zunil municipio, ridge to Volcán Zunil, *Steyermark 34906*, *34907* (F, **Fulford 1976**; **Freire 2006**). QUICHÉ: S. loc., *Pérez 2338* (USCG, Pérez 2009). SAN MARCOS: S. loc., *Sharp 5496* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**). SUCHITEPÉQUEZ: Volcán Santa Clara, *Steyermark 46742* (F, **Fulford 1976**; **Freire 2006**; **Pérez 2009**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007).

HONDURAS. S. loc. (Fulford and Sharp 1990). COMAYAGUA: Siguatepeque, *Yuncker 6560* (DPU, **Fulford 1976**). *LEMPIRA: Gracias municipio, Montaña de Celaque, 14°33′N, 88°38′W, 10 May 1992, *Allen 11853*, det. Whittemore 1993 (MO-3994174!, **this publication**).

COSTA RICA. S. loc. (Bonner 1966 as *Heteroscyphus pittieri*; Fulford and Sharp 1990; Gradstein and Holz 2005); S. loc., *Pittier* (G, **Stephani 1908c** as *Chiloscyphus pittieri*); S. loc., *Schäfer-Verwimp & Holz SV/H-0474/A* (JE, **Vanderpoorten and Long 2006**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 2829* (U, **Kappelle 1996**). ALAJUELA: Poás Volcano, *Morales & Canessa 418* (USJ, **Morales and Griffin 1983**; **Morales 1991**); Poás Volcano, 30 Jul 1977, *Griffin & Araya 18*, *98* (FLAS, B-209946, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 93* (FLAS-020509, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Cartago cantón, El Muñeco, 1,400–1,500 m, *Standley & Torres 50931* (JE, **Fulford 1976**); Cartago cantón, El Muñeco, 1,400–1,800 m, *Standley 50931* (B-05836, **Herzog 1938** as *Lophocolea aberrans* var. *costaricensis*; **Grolle 1962a**; **Geissler and Bischler 1985** as *Lophocolea aberrans* var. *costaricensis*; **Dauphin 2005**); Pococí cantón, La Georgina, *Dauphin 2240* (CR, **Dauphin 2005**). HEREDIA: Barva cantón, between Laguna de Barva and Carrizal, 2,800 m, Jan 1889, *Pittier 6014* (G-00069439 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=115868&lang=en, **TYPE** of *Chiloscyphus pittieri*, **Stephani 1893c** as *Chiloscyphus pittieri*; **Grolle 1962a**; **Bonner 1963b** as *Chiloscyphus pittieri*; **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43758* (JE, **Herzog 1938** as *Lophocolea aberrans* var. *costaricensis*; **Grolle 1962a**; **Fulford 1976**; **Geissler and Bischler 1985** as *Lophocolea aberrans* var. *costaricensis*; **Morales 1991**; **Dauphin 2005**); Dota cantón, El Empalme, *Little 5623*, *5632*, *5655* (FULF, **Fulford 1976**; **Morales 1991**; **Dauphin 2005**); Dota cantón, N of El Copey, above Los Lotes, 2,100–2,400 m, *Standley 42711*,

42781, *42800* (JE, **Herzog 1938** as *Lophocolea aberrans* var. *costaricensis*; **Grolle 1962a**; **Fulford 1976**; **Geissler and Bischler 1985** as *Lophocolea aberrans* var. *costaricensis*; **Morales 1991**; **Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41686*, *41758a*, *41835*, *42248*, *42933* (JE, **Herzog 1938** as *Lophocolea aberrans* var. *costaricensis*; **Grolle 1962a**; **Fulford 1976**; **Geissler and Bischler 1985** as *Lophocolea aberrans* var. *costaricensis*; **Morales 1991**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Gradstein 1999a); S. loc., *Dauphin et al. 1578* (GOET, **Hentschel et al. 2006a, 2007b**; **Feldberg et al. 2010c**; **Patzak et al. 2016**; **Renner et al. 2017a**). CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, Sendero El Retoño, 2,460 m, *Gradstein 9762* (GOET, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1578* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Leptoscyphus cuneifolius (Hook.) Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851) subsp. ***cuneifolius***.

≡*Jungermannia cuneifolia* Hook., *Brit. Jungermann.*: table 64, 1814 (Hooker 1814). Type: Ireland.

?HONDURAS. S. loc. (Fulford and Sharp 1990; Schäfer-Verwimp and Giancotti 1993). Note: We are not aware of any firsthand report from Honduras.

COSTA RICA. S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Gradstein & Morales 9738* (USJ, **Kappelle 1996**). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 9394* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9738*, *9743* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 1999a). †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This must be referring to the "new" comarca Naso Tjër Di. NASO TJËR DI COMARCA: Cerro Fábrega, 3,335 m, 26 Mar 2004, *De Gracia et al. 338* (GOET, **Dauphin 2007**). PANAMA: S. loc. (Batan et al. 2013). Note: We are not aware of any firsthand report from Panama district.

Also reported from Northern Europe, Macaronesia, Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Leptoscyphus cuneifolius subsp. ***fragilis*** (J.B.Jack et Steph.) Grolle, *Nova Acta Leop.*, n.s., 25(161): 28, 1963 (Grolle 1962a).

≡*Leioscyphus fragilis* J.B.Jack et Steph., *Hedwigia* 31(1): 20, 1892 (Jack and Stephani 1892). Type: Colombia.

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30921/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34554 p.p.* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Leptoscyphus gibbosus (Taylor) Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851).

≡*Chiloscyphus gibbosus* Taylor, *London J. Bot.* 5: 283, 1846 (Taylor 1846b). Type: Martinique.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 223*, *474*, *480*, *487* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc., *Schäfer-Verwimp & Holz SV/H-0364* (JE, **Patzak et al. 2016**; **Renner et al. 2017a**; **Bakalin et al. 2022a**). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Morales & Gradstein 2395* (U, USJ, **Gradstein et al. 1994**; **Kappelle 1996**; **Dauphin 2005**); El Guarco cantón, 3 de Junio, 3 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0429*, det. Schäfer-Verwimp 2000 (MO-5271205!, **this publication**). GUANACASTE: Tilarán cantón, Arenal, *Haber 10286* (CR, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000 m, *Salazar Allen et al. 698* (PMA, **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 616a*, *662* (PMA, **Stotler et al. 1998**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34485* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34226* (JE, **Schäfer-Verwimp 2014**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, behind INTEL tower, *Salazar Allen et al. 6773* (PMA, **Stotler et al. 1998**).

COCOS I. Boca Río Yglesias, 5°32′57″N, 87°03′36″W, 0 m, *Dauphin 1141*, det. G. Dauphin Apr 2021 (USJ-48203!, CR-4468400!, W-0207447! https://w.jacq.org/W0207447, **Dauphin 1995, 1999, 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Leptoscyphus gradsteinii Vanderp., Schäf.-Verw. et D.G.Long, *Taxon* 59(1): 182, 2010 (Vanderpoorten et al. 2010). Holotype: Costa Rica, San José, C. de la Muerte, Reserva 3 de Junio and surroundings, altitude 2,650–2,800 m, on trunk in *Sphagnum* bog, 25 Sep 1994, *Gradstein & Mues 9694* (GOET-16862 https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=16862&Z_CHK=1361).

COSTA RICA. S. loc., *Gradstein 9694* (GOET, **Patzak et al. 2016**; **Renner et al. 2017a**). CARTAGO: El Guarco cantón, Cerro de La Muerte, 3 de Junio and surroundings, 2,650–2,800 m, 25 Sep 1994, *Gradstein & Mues 9694* (GOET, **TYPE, Vanderpoorten et al. 2010**; Söderström et al. 2012a).

Also reported from Western South America.

Leptoscyphus hexagonus (Nees) Grolle, *Nova Acta Leop.*, n.s., 25(161): 47, 1963 (Grolle 1962a).

≡*Chiloscyphus hexagonus* Nees, *Syn. Hepat.* 2: 177, 1845 (Gottsche et al. 1845b). Type: Peru.

COSTA RICA. *GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, SE along continental divide for ~0.5 km (along boundary with Prov. Alajuela), 10°56′N, 85°27′W, 1,610–1,680 m, 16 Aug 2007, *Grayum 12754*, det. Dauphin May 2017 (MO-6360625!, **this publication**). SAN JOSÉ: Pérez Zeledón cantón, Cerro de La Muerte near the American Highway, 9°34.204′N, 83°45.220′W, 3,300 m, 28 Mar 2010, *van Melick 214528* (JE, hb. van Melick, **Ellis et al. 2019a**).

Also reported from the Caribbean, Northern South America, Western South America.

Leptoscyphus intermedius Grolle, *Nova Acta Leop.*, n.s., 25(161): 32, 1963 (Grolle 1962a). Type: Guyana.

HONDURAS. S. loc. (Nöske et al. 2003; Gradstein and Uribe 2016; Gradstein 2021). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, *Standley 4881* (F, **Fulford 1976**).

PANAMA. NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 228*, *313*, *357* (PMA, **Dauphin 2007**).

Also reported from the Caribbean, Northern South America, Western South America.

Leptoscyphus lambinonii Vanderp., Schäf.-Verw. et D.G.Long, *Taxon* 59(1): 179, 2010 (Vanderpoorten et al. 2010). Holotype: Costa Rica, Cartago, Orosi Valley, Tapanti National Park, primary rainforest, Sendero La Oropendola, epiphytic, ~600 m, 30 Dec 1999, *Schäfer-Verwimp and Holz SV/H-0342* (JE, isotype: CR).

COSTA RICA. CARTAGO: Paraíso cantón, Tapantí National Park, Orosi Valley, Sendero "La Oropéndola," ~600 m, 30 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0342* (JE, CR, **TYPE, Vanderpoorten et al. 2010**; Söderström et al. 2012a; **Patzak et al. 2016**; **Renner et al. 2017a**).

Not found outside Central America.

Leptoscyphus obcordatus (Spruce) Grolle, *Nova Acta Leop.*, n.s., 25(161): 33, 1963 (Grolle 1962a).

≡*Leioscyphus obcordatus* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 446, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. S. loc. (Costa 2017; Costa et al. 2020). SAN JOSÉ: Pérez Zeledón cantón, Chirripó National Park, Fila Cementerio de La Máquina, 9°30′N, 83°30′W, 2,300 m, *Kappelle 3528* (U, GOET, **Kappelle 1996**; **Dauphin et al. 1998**; **Dauphin 2005**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 974 p.p.*, det. G. Dauphin Oct 2020 (CR!, **this publication**).

Also reported from Western South America, Brazil.

Leptoscyphus orbignianus (Nees et Mont.) L.Söderstr. et A.Hagborg, *Lindbergia* 46(e25018): 1, 2023 (Söderström and Hagborg 2023c).

≡*Lophocolea orbigniana* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 55, 1836 (Nees and Montagne 1836). Lectotype: Bolivia.

=*Lophocolea trapezoïdes* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 251, 1843 (Montagne 1843), syn. fide Gradstein (2021). Type: Guadeloupe.

≡*Leptoscyphus trapezoïdes* (Mont.) L.Söderstr., *Phytotaxa* 112(1): 27, 2013 (Söderström et al. 2013b).

=*Lophocolea breutelii* Gottsche, *Syn. Hepat.*: 154, 1845 (Gottsche et al. 1845b), syn. fide Fulford (1976). Type: St. Kitts.

≡*Chiloscyphus breutelii* (Gottsche) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 412, 1985 (Engel and Schuster 1984).

=*Lophocolea columbica* Gottsche, *Syn. Hepat.*: 155, 1845 (Gottsche et al. 1845b), syn. fide Engel and Schuster (1984). Type: Colombia.

=*Lophocolea quadridentata* Spruce, *Mem. Torrey Bot. Club* 1(3): 137, 1890 (Spruce 1890), syn. fide Gradstein (2021). Type: Bolivia.

≡*Chiloscyphus quadridentatus* (Spruce) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 422, 1985 (Engel and Schuster 1984).

≡*Leptoscyphus quadridentatus* (Spruce) Grolle ex Uribe et Gradst., *Bryophyt. Biblioth.* 53: 47, 1998 (Uribe and Gradstein 1998) nom. inval. (ICN2018 Art. 41.5; basionym not cited).

=*Lophocolea effusidens* Steph., *Bull. Herb. Boissier*, sér. 2, 7(4): 301 (=*Sp. Hepat. [Stephani]* 3: 165), 1907 (Stephani 1907a), syn. fide Fulford (1976). Lectotype: Peru. Note: The synlectotype from Costa Rica is *Heteroscyphus marginatus* (Fulford 1976).

=*Lophocolea breutelii* Gottsche var. *robusta* Herzog ex Fulford, *Mem. New York Bot. Gard.* 11(4): 435, 1976 (Fulford 1976), nom. inval. (ICN2018 Art. 36.1(c); publ. in syn.). Original material (Fulford 1976: 437): Costa Rica, Heredia, San Isidro, *Standley & Valerio 51474* (JE-04010837 https://je.jacq.org/JE04010837, original material also in US-04675709 http://n2t.net/ark:/65665/33a19c1a8-02ad-4d83-83b7-731f05dc6f02).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 35*, *39*, *61*, *63*, *132* (USCG, **Freire et al. 2013** as *Chiloscyphus breutelii*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Lophocolea 'trapezoidea'* and *Leptoscyphus quadridentatus*).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Lophocolea 'trapezoidea'*; Morales 1991 as *Lophocolea quadridentata*;

Gradstein 1999a as *Lophocolea* '*trapezoidea*'; Dauphin 2005 as *Lophocolea trapezoïdes* and *Lophocolea quadridentata*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Lophocolea* '*trapezoidea*'); Cordillera de Talamanca, *Kappelle 626* (CR, **Kappelle 1996** as *Lophocolea* '*trapezoidea*'). ALAJUELA: Poás National Park, *Griffin & Araya 60* (USJ, FLAS, **Morales 1991** as *Lophocolea trapezoïdes*; **Dauphin 2005** as *Lophocolea trapezoïdes*); Poás Volcano, 31 Jul 1977, *Griffin & Araya 71* (USJ, FLAS, **Dauphin 2005** as *Lophocolea quadridentata*; **Morales and Griffin 1983** as *Lophocolea quadridentata*; **Morales 1991** as *Lophocolea quadridentata*); Poás Volcano, 31 Jul 1977, *Griffin & Araya 86* (USJ, FLAS, **Dauphin 2005** as *Lophocolea quadridentata*; **Morales and Griffin 1983** as *Lophocolea quadridentata*; **Morales 1991** as *Lophocolea quadridentata*). CARTAGO: Jiménez cantón, N de Pejibaye, *Standley 46967* (JE, **Fulford 1976** as *Lophocolea trapezoïdes*; **Morales 1991** as *Lophocolea trapezoïdes*; **Dauphin 2005** as *Lophocolea trapezoïdes*); Paraíso cantón, Orosi Valley, Tapantí National Park, Sendero "La Oropéndola"; *Schäfer-Verwimp & Holz SV/H-0345* (JE, **Patzak et al. 2016**; **Renner et al. 2017a**); Paraíso cantón, Orosi, Tapantí National Park, *Griffin et al. 167*, *174*, *180* (B-209918, **Morales 1991** as *Lophocolea trapezoïdes*; **Dauphin 2005** as *Lophocolea trapezoïdes*). HEREDIA: San Isidro cantón, Cerro de Las Lajas, *Standley & Valerio 51474* (JE, B-06021, **TYPE** of *Lophocolea breutelii* var. *robusta*, **Herzog 1938** as *Lophocolea breutelii*; **Fulford 1976** as *Lophocolea trapezoïdes*; **Morales 1991** as *Lophocolea trapezoïdes*; **Dauphin 2005** as *Lophocolea trapezoïdes*). LIMÓN: Talamanca cantón, Parque Internacional La Amistad, cerro Kamúk, *Quesada 1381* (CR, **Dauphin 2005** as *Lophocolea trapezoïdes*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Lophocolea* '*trapezoidea*'); Coto Brus cantón, Fila Cruces, *Dauphin 1746* (CR, **Dauphin 2005** as *Lophocolea trapezoïdes*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Lophocolea* '*trapezoidea*'); Puntarenas cantón, Brillante, 25 Jul 1966, *James, W.* (R, **Reed and Robinson 1971** as *Lophocolea columbica*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Lophocolea trapezoïdes*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Lophocolea trapezoïdes*); Dota cantón, San Gerardo (Dauphin 2005 as *Lophocolea trapezoïdes*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Lophocolea* '*trapezoidea*'); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), *Schultes 12041* (FLAS, **Morales 1991** as *Lophocolea trapezoïdes*; **Dauphin 2005** as *Lophocolea trapezoïdes*).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30974* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Mono, 1,100–1,300 m (**Salazar Allen et al. 2021** as *Chiloscyphus quadridentatus*); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34590* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Leptoscyphus ovatus (Spruce) Grolle, *Nova Acta Leop.*, n.s., 25(161): 45, 1963 (Grolle 1962a).

≡*Leioscyphus ovatus* Spruce, *J. Linn. Soc., Bot.* 30(210): 357, 1895 (Gepp 1895). Type: Dominica.

COSTA RICA. ALAJUELA: Poás Volcano, *Griffin & Araya 43*, *45*, *59* (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**).

PANAMA. S. loc. (Fulford 1987). CHIRIQUÍ: S. loc., *D'Arcy 2* (MO, **Fulford 1976**; **Stotler et al. 1998**).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 967*, det. M. I. Morales (USJ, **Dauphin 1995**, **1999**, **2005**).

Also reported from the Caribbean, Northern South America, Brazil.

Leptoscyphus physocalyx (Hampe et Gottsche) Gottsche, *Bot. Zeitung (Berlin) Beil.* 16: 33, 1858 (Gottsche 1858).

≡*Jungermannia physocalyx* Hampe et Gottsche, *Linnaea* 20(3): 326, 1847 (Hampe 1847). Type: Colombia.

COSTA RICA. S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Paraíso cantón, Cerro Asunción, 3,325 m, *Dauphin* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. NASO TJËR DI COMARCA: Cerro Fábrega, 26 Mar 2004, *De Gracia 342* (PMA, **Dauphin 2007**).

Also reported from Northern South America, Western South America.

Leptoscyphus porphyrius (Nees) Grolle, Österr. *Bot. Z.* 117(1): 3, 1969 (Grolle 1969b) subsp. ***porphyrius***.

≡*Chiloscyphus porphyrius* Nees, *Syn. Hepat.* 2: 185, 1845 (Gottsche et al. 1845b). Type: Peru.

=*Jungermannia liebmaniana* Lindenb. et Gottsche, *Syn. Hepat.* 5: 668, 1847 (Gottsche et al. 1847), syn. fide Grolle (1969b). Type: Mexico.

≡*Leptoscyphus liebmanianus* (Lindenb. et Gottsche) Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851).

GUATEMALA. S. loc. (Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004**). SAN MARCOS: S. loc., 8,700 ft (2,652 m), *Sharp 5494 p.p.* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**). ZACAPA: S. loc., *Steyermark 42819* (F, **Fulford 1976**; **Freire 2006**; **Pérez 2009**).

COSTA RICA. S. loc. (Fulford 1967 as *Leptoscyphus* '*liebmannianus*'; Fulford and Sharp 1990; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Schuster 2021 as *Leptoscyphus liebmannianus*); S. loc., *Holz CR 99-1044* (JE, **Hentschel et al. 2007b**; **Patzak et al. 2016**); S. loc., *Tonduz* (**Fulford 1976**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Davidse et al. 23948* (CR, **Kappelle**

1996). ALAJUELA: S. loc., 25 Jun 1968, *Canessa* (**Morales and Griffin 1983**); Poás Volcano, *Morales 452* (USJ, **Morales 1991**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1404*, *1420* (CR, **Dauphin 2005**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, along South Line, 16 Mar 1969, *James, W. 1969-11* (R, **Reed and Robinson 1971** as *Leptoscyphus liebmannianus*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Puntarenas cantón, Brillante, 25 Jul 1966, *James, W.* (R, **Reed and Robinson 1971** as *Leptoscyphus liebmannianus*). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, *Dauphin 3383* (CR, **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41758a* (**Grolle 1962a** as *Leptoscyphus liebmannianus*).

PANAMA. S. loc. (Gradstein 1999a). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30998*, *31024* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,260–2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30877*, *30884*, *30923* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,450 m, *Schäfer-Verwimp & Verwimp 34384/B* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 967 p.p.*, det. G. Dauphin Mar 2021 (USJ-47180!, **this publication**).

Also reported from Mexico, the Caribbean, Northern North America, Western South America, Brazil.

Lethocolea Mitt., Hooker, *Handb. N. Zeal. fl.* 2: 751, 1867 (Hooker 1867).

Lethocolea glossophylla (Spruce) Grolle, *Bot. Mag. (Tokyo)* 78(921): 83, 1965 (Grolle 1965a).

≡*Symphyomitra glossophylla* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 503, 1885 (Spruce 1885).

COSTA RICA. S. loc. (Gradstein 1999a; Gradstein et al. 2001b; Dauphin 2005; Santos 2008; Schäfer-Verwimp and Pócs 2009; Schuster 2021); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9726* (USJ, **Gradstein et al. 1994**); Pérez Zeledón cantón, Chirripó National Park, Valle de Los Conejos, 3,500 m, *Dauphin 1250* (**Gradstein et al. 1994**; **Dauphin 2005**); Pérez Zeledón cantón, Chirripó National Park, Valle de los Conejos, *Kuhbier 627*, det. Grolle 1981 (B-225776!, **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Gradstein 9726* (**Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lindigianthus Kruijt et Gradst., *Beih. Nova Hedwigia* 80: 165, 1985 (Kruijt and Gradstein 1985).

Lindigianthus cipaconeus (Gottsche) Kruijt et Gradst., *Beih. Nova Hedwigia* 80: 166, 1985 (Kruijt and Gradstein 1985).

≡*Lejeunea cipaconea* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 150, 1864 (Gottsche 1864). Type: Colombia.

COSTA RICA. S. loc. (Gradstein 1985b, 1987, 1999a, 2021; Gradstein et al. 2001b; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp et al. 2013); Cordillera de Talamanca (**Holz et al. 2001**; Engel and Gradstein 2003; **Holz and Gradstein 2005b**; Holz 2006). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Chirripó National Park, Fila del Cementerio de la Maquina, *Chaverri et al. 1018* (CR, U, **Kruijt and Gradstein 1985**; **Gradstein 1994**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Lophocolea (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

Lophocolea aberrans Lindenb. et Gottsche, *Syn. Hepat.* 5: 696, 1847 (Gottsche et al. 1847).

HONDURAS. S. loc. (Fulford and Sharp 1990; Gradstein 2021). COMAYAGUA: Siguatepeque municipio, El Achote, *Yuncker 6641* (DPU, **Fulford 1976**); Siguatepeque, 1,080–1,400 m, *Standley 56378* (JE, **Herzog 1938**; **Fulford 1976**).

COSTA RICA. S. loc. (Fulford and Sharp 1990). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás National Park, 20–25 Aug 1973, *Griffin et al. 123*, det. Dauphin Jun 2017 (MO-819385!, **this publication**).

?PANAMA. ?CHIRIQUÍ: Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, Guerra et al. 2020 as *Lophocolea* cf. *aberrans*). Note: We are not aware of any positively identified specimen from Panama.

Also reported from Southern Africa, Southeastern Pacific, Mexico, Western South America, Brazil.

Lophocolea bidentata (L.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

≡*Jungermannia bidentata* L., *Sp. Pl.* 1: 1132, 1753 (Linnaeus 1753). Type: Europe. Note: *Lophocolea bidentata* is often treated s. lat. (including also *Lophocolea coadunata*), and some of the reports may actually be referred to the latter.

GUATEMALA. S. loc. (Freire et al. 2012). ALTA VERAPAZ: S. loc., *Pérez 243* (**Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**); Volcán Pacaya, *Balázs B/78/23/C*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**). *CHIMALTENANGO: Road from Patzún to Paraíso Chichoy, 350 m W of Xeatzán Bajo, 14°40′31.2″N, 91°03′26.7″W, 8 Dec 2013, *Quedensley 12987*, det. Dauphin Sep 2017 (MO, W-0089074!, **this publication**). HUEHUETENANGO: S. loc., *Pérez 1207* (USCG, Pérez 2009). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUETZALTENANGO: Slope above Quetzaltenango, *Sharp 1972* (TENN, Pérez 2009). QUICHÉ: Nebaj, *Sharp 2414* (TENN, Pérez 2009). SACATEPÉQUEZ: S. loc., *Salvin* (NY, Pérez 2009). SAN MARCOS: NW of San Sebastián, *Steyermark 35624* (F, Pérez 2009). SOLOLÁ: Volcán Santa Clara, *Steyermark 46897 p.p.* (F, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, along stream entering Rio Bonito, 15°40′N, 86°51′W, 19 Apr 1996, *Allen 17347*, det. Whittemore 1996 (MO-4428683!, **this publication**). *LEMPIRA: Gracias municipio, Filo Seco, 13 km SW of Gracias, 14°32′N, 88°41′W, 14 May 1992, *Allen 12139*, det. Dauphin Jun 2017 (MO-3994175!, **this publication**); Gracias municipio, Montaña de Celaque, Rio Naranjo, ~9 km SW of Gracias, 14°33′N, 88°40′W, 14 Nov 1991, *Allen 11397*, det. Dauphin Jun 2017 (MO-3967045!, **this publication**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). *ALAJUELA: San Ramón cantón, Monteverde Cloud Forest Reserve, Refugio El Alemán, 10°18′N, 84°46–47′W, 2 Apr 1992, *Lyon 593*, det. Dauphin Jun 2017 (MO-4423823!, **this publication**); San Ramón cantón, Monteverde Cloud Forest Reserve, Refugio El Alemán, 10°18′N, 84°46–47′W, 2 Apr 1992, *Lyon 621*, det. Dauphin Jun 2017 (MO-4423824!, **this publication**). *CARTAGO: La Union cantón, Cerro de La Carpintera, *Little 5562* (hb. Little, **Morales 1991**); Oreamuno cantón, Irazú Volcano, *Little 5539*, *5541*, *5547* (FULF, **Morales 1991**); Prusia, 22 Aug 1993, *Arias 1*, det. Dauphin and Morales Oct 2016 (USJ!, **this publication**). *PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 5 Aug 1993, *Timme 11426*, det. Dauphin Jun 2017 (MO-6690115!, **this publication**); Monteverde, 18 Nov 1970, *James 1970-33*, det. Dauphin Jun 2017 (MO-6163148!, **this publication**). SAN JOSÉ: Aserrí cantón, Entre San José y Desamparados, Aserrí, *Little 5515 p.p.* (FULF, **Morales 1991**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, El Empalme, *Little 5610a* (FULF, **Morales 1991**; **Kappelle 1996**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. S. loc. (Gradstein 1999a). CHIRIQUÍ: Gualaca distrito, Quebrada Honda in Fortuna Forest Reserve (8°45′40″N, 82°14′22″W), 1,150 m, 15 Jul 2021, *Rodriguez et al. 1102* (UCH, **Ellis et al. 2022a**); Tierras Altas distrito, Cerro Punta, *Stern & Chambers 92 p.p.* (YU, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COLÓN: Colón distrito, Quebrada Ancha, *Steyermark & Allen* (MO, **Stotler et al. 1998**); Colón distrito, Quebrada Bonita, *Steyermark & Allen 17189*, *17190* (MO, **Stotler et al. 1998**); Colón distrito, Quebrada Bonita, 27 Dec 1934, *Steyermark 17190*, *17202*, det. Dauphin Jun 2017 (MO-5280982!, **this publication**). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, *Salazar Allen et al. 6773* (PMA, **Stotler et al. 1998**). PANAMÁ: Panamá distrito, Quebrada Culebra, *Steyermark 17218 p.p.* (MO, **Stotler et al. 1998**).

COCOS I. Mirador a Bahía Wafer, 5°32′57″N, 87°03′56″W, 200 m, 13 Jun 1994, *Dauphin 1210* (CR, USJ, MO, **Dauphin 1995**, 1999, both as *Lophocolea* cf. *bidentata*, **2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Lophocolea coadunata (Sw.) Mont., *Voy. Amér. Mérid., Bot.* 7(2): 76, 1839 (Montagne 1839b).

≡*Jungermannia coadunata* Sw., *Fl. Ind. Occid.* 3: 1850, 1806 (Swartz 1806). Type: Jamaica.

GUATEMALA. ALTA VERAPAZ: Cobán, *Standley 70467* (F, **Fulford 1976**; **Freire 2006**). BAJA VERAPAZ: Jicaro, *Sharp 2689* (TENN, **Fulford 1976**; **Freire 2006**). IZABAL: Along Río Frío, *Steyermark 41553* (F, **Fulford 1976**; **Freire 2006**). QUETZALTENANGO: En colina arriba de Quetzaltenango, *Sharp 2024b* (TENN, **Freire 2006**); Mujaliá, between San Martín and Colomba, 1,800 m, 2 Jan 1941, *Standley 85696* (F, **Fulford 1976**; **Freire 2006**); Palestina de lso Altod municipio, mountains SE of Palestina, *Standley 84217* (F, **Fulford 1976**; **Freire 2006**); Quetzaltenango municipio, Volcán Santa María, *Standley 34076*, *34089*, *83407A*, *83435* (F, **Fulford 1976**; **Freire 2006**); Quetzaltenango municipio, Volcán Santa María, *Steyermark 34076*, *34089* (F, **Freire 2006**); San Carlos Sija municipio, Cerro de Sija, *Sharp 5044* (TENN, **Fulford 1976**; **Freire 2006**); slope above Quetzaltenango, *Sharp 1972*, *1999a*, *1999b*, *2008*, *2024b*

(TENN, **Fulford 1976**); Zunil municipio, Volcán Zunil, *Standley 34600*, *85849 p.p.* (F, **Fulford 1976**; **Freire 2006**). QUICHÉ: Between Chajul and Cotzal, *Sharp 5293 p.p.* (TENN, **Fulford 1976**; **Freire 2006**); between Nebaj and Río Tzichel, *Sharp 5314* (TENN, **Fulford 1976**; **Freire 2006**); Nebaj, *Sharp 2414*, *5325a*, *5325b* (TENN, **Fulford 1976**; **Freire 2006**). SAN MARCOS: NW of San Sebastián, *Steyermark 35624* (F, **Fulford 1976**; **Freire 2006**). SOLOLÁ: Volcán Santa Clara, *Steyermark 46897 p.p.* (F, **Fulford 1976**; **Freire 2006**).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55669* (JE, **Fulford 1976**). COMAYAGUA: Siguatepeque, *Standley 6823 p.p.* (JE, **Fulford 1976**); Siguatepeque, *Yuncker 6527 p.p.* (JE, **Fulford 1976**).

EL SALVADOR. AHUACHAPÁN: Near Ahuachapán, *Standley 4588* (F, **Fulford 1976**).

COSTA RICA. CARTAGO: La Union cantón, Cerro de La Carpintera, *Little 5562* (hb. Little, **Fulford 1976**; **Dauphin 2005**); Oreamuno cantón, Irazú Volcano, *Little 5539*, *5541*, *5547* (FULF, **Fulford 1976**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Cerro Frantzius, *Quesada 1177* (CR, **Dauphin 2005**); Coto Brus cantón, Fila Cruces, *Dauphin 1800* (CR, **Dauphin 2005**); Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1344*, *1351* (CR, **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, Entre San José y Desamparados, Aserrí, *Little 5515 p.p.* (FULF, **Fulford 1976**; **Dauphin 2005**); Dota cantón, El Empalme, *Little 5610a* (FULF, **Fulford 1976**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Cerro Punta, *Stern & Chambers 92 p.p.* (YU, **Fulford 1976**). COLÓN: Colón distrito, Quebrada Bonita, *Steyermark & Allen 17189 p.p.*, *17190* (MO, **Fulford 1976**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Malesia, Australia, New Zealand(?), Northeastern Pacific?, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Lophocolea fragmentissima R.M.Schust., *Phytologia* 39(4): 245, 1978 (Schuster 1978a). Type: Venezuela.

≡*Campanocolea fragmentissima* (R.M.Schust.) R.M.Schust., *J. Hattori Bot. Lab.* 82: 253, 1997 (Schuster 1997).

COSTA RICA. S. loc. (León et al. 1998 as *Campanocolea fragmentissima*; Schäfer-Verwimp and Pócs 2009 as *Campanocolea fragmentissima*; Gradstein and Uribe 2016; Gradstein 2021; Gradstein and Pócs 2021; Schuster 2021 as *Campanocolea fragmentissima*); Cordillera de Talamanca (Engel and Gradstein 2003 as *Campanocolea fragmentissima*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Gradstein et al. 2001b as *Campanocolea fragmentissima*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9743* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005** as *Campanocolea fragmentissima*).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Campanocolea fragmentissima*). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 146* (PMA, **Dauphin 2007** as *Campanocolea fragmentissima*).

Also reported from the Caribbean, Northern South America, Western South America.

Lophocolea fragrans (Moris et De Not.) Gottsche, Lindenb. et Nees subsp. ***cocosana*** G.Dauphin, Gradst. et M.I.Morales, *Nova Hedwigia* 106(1/2): 28, 2018 (Dauphin et al. 2018). Holotype: Costa Rica, Puntarenas, Isla de Cocos, mirador a Bahía Wafer, 200 m, 1994, sobre tronco de *Sacoglottis holdridgei* Cuatr., 13 Jun 1994, *Dauphin 1210* (CR, isotype USJ). Paratype, Costa Rica, Puntarenas, Isla de Cocos, entre Bahía Chatham y Wafer, alrededores de la torre de telecomunicaciones del ICE, 5°32′49″N, 87°32′58″W, 240 m, Jun 2016, *Sánchez 2690*, *2708* (CR-4468303).

COCOS I. Entre Bahía Chatham y Wafer, alrededores de la torre de telecomunicaciones del ICE, 5°32′49″N, 87°32′58″W, 240 m, 1 Jan 2016, *Sanchez 2690*, *2708* (CR, **Dauphin et al. 2018**); Mirador a Bahía Wafer, 5°32′57″N, 87°03′56″W, 200 m, 13 Jun 1994, *Dauphin 1210* (CR, USJ, MO, **Dauphin et al. 2018**; **Söderström et al. 2020**).

Not found outside Central America.

Lophocolea liebmanniana Gottsche, *Mexik. Leverm.*: 113, 1863 (Gottsche 1863). Type: Mexico.

=*Lophocolea liebmanniana* Gottsche var. *bisbifida* Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Fulford (1976). Original material (Fulford 1976: 427): Honduras, Lancetilla Valley, near Tela, on log, 20–600 m, 6 Dec 1927–20 Mar 1928, *Standley 54836*, det Herzog Mar 1929 (JE-04010827 but no *Lophocolea liebmanniana* is in the packet, which was also noted by M. Fulford although she synonymized it with that species. Her synonymization must thus be questioned).

HONDURAS. S. loc. (Fulford 1987; Fulford and Sharp 1990). ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, along stream entering Rio Bonito, 15°40′N, 86°51′W, 25 Apr 1996, *Allen 17608 p.p.*, det. Dauphin Jun 2017 (MO-6699931!, **this publication**); Tela municipio, Lancetilla Valley (**Geissler and Bischler 1985** as *Lophocolea liebmanniana* var. *bisbifida*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54836b* (Fulford 1936; **Herzog 1938**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** also as *Lophocolea liebmanniana* var. *bisbifida*).

COSTA RICA. PUNTARENAS: Osa cantón, Rincón, trail to Cerro Chocuaco, 250 m, *Gradstein & Dauphin 9330* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, trail to Cerro Chocuaco, 250 m, *Gradstein & Dauphin 9338* (**Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al.**

2021); Gualaca distrito, Hornito, Fortuna, 1,000 m, *Salazar Allen et al. 582 p.p.* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15134* (**Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Lophocolea muricata (Lehm.) Nees, *Syn. Hepat.* 2: 169, 1845 (Gottsche et al. 1845b).

≡*Jungermannia muricata* Lehm., *Linnaea* 4(3): 363, 1829 (Lehmann 1829). Type: South Africa.

≡*Chiloscyphus muricatus* (Lehm.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 419, 1985 (Engel and Schuster 1984).

GUATEMALA. S. loc. (Mahú 1981). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 360* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUETZALTENANGO: S. loc., *Standley 84963* (F, Pérez 2009); San Martín, *Standley 84965* (F, **Fulford 1976**; **Freire 2006**). QUICHÉ: S. loc., *Pérez 2325* (USCG, Pérez 2009). SAN MARCOS: S. loc., *Sharp 5496c* (TENN, **Fulford 1976**; **Freire 2006**; **Pérez 2009**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

?HONDURAS. S. loc. (Schuster 1980d, 2021 as *Chiloscyphus muricatus*; Miller et al. 1983; Enroth 1991). Note: We are not aware of any firsthand report from Honduras.

***EL SALVADOR.** *SONSONATE: Izalco municipio, near top of Cerro Verde, ~2,030 m, 30 Jul 1977, *Croat 42225 p.p.*, det. Dauphin 2017 (MO-6699908! http://tropicos.org/specimen/100988669, **this publication**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Dauphin 2032* (CR, **Dauphin 2005**); Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1348* (CR, **Dauphin 2005**); Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 50b* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (**Mitten 1854b**; Schiffner 1898a; Jovet-Ast 1960; Miller et al. 1983; Stotler et al. 1998). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,630 m, *Schäfer-Verwimp & Verwimp 34409/A*, *34417/B* (JE, **Schäfer-Verwimp 2014** as *Chiloscyphus muricatus*); Volcán Barú, 7,500 ft (2,286 m), *Salazar Allen et al. 8422* (PMA, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30773 p.p.* (JE, Schäfer-Verwimp 2014 as *Chiloscyphus muricatus*).

Also reported from Northern Europe, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, Subarctic America?, Southwestern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lophocolea tenerrima Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 439, 1885 (Spruce 1885). Type: Ecuador.

=*Lophocolea erosa* Gradst., *Mem. New York Bot. Gard.* 84: 67, 1999 (Gradstein 1999a), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. in. Dauphin et al. (2018) [*non L. erosa* (J.J.Engel) L.Söderstr. (Söderström et al. 2013b)].

COSTA RICA. S. loc. (Gradstein 1999a as *Lophocolea erosa*, 2021; Gradstein and Pócs 2021). CARTAGO: Paraíso cantón, Orosi, base del Cerro Asunción, 9°34′54.22″N, 83°45′50.42″W, 3,350 m, 30 Sep 2016, *Dauphin et al. 4605* (CR, USJ, PC, **Dauphin et al. 2018**). SAN JOSÉ: Pérez Zeledón cantón, Cerro de La Muerte, along the Pan-American Highway, 3,200 m, 29 Sep 1994, *Gradstein 9744* (U, USJ, **Dauphin et al. 2018**).

Also reported from Northern South America, Western South America.

Lophocolea tricuspidata Herzog, *Rev. Bryol. Lichénol.* 11(1): 17, 1939 (Herzog 1938). Lectotype (Söderström and Hentschel 2023: 13): Costa Rica, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723/C* (JE-04001777 https://je.jacq.org/JE04001777).

≡*Chiloscyphus tricuspidatus* (Herzog) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 424, 1985 (Engel and Schuster 1984).

COSTA RICA. S. loc. (Fulford 1976; **Engel and Schuster 1984** as *Chiloscyphus tricuspidatus*). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, *Standley 43723* (US, **Morales 1991**; **Kappelle 1996**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723c*, det. Grolle (JE-04001777 https://je.jacq.org/JE04001777, **TYPE**, **Geissler and Bischler 1985**; **Dauphin 2005** as *Chiloscyphus tricuspidatus*).

Not found outside Central America.

Lopholejeunea (Spruce) Steph., *Bot. Gaz.* 15(11): 285, 1890 (Stephani 1890d).

Lopholejeunea eulopha (Taylor) Schiffn., *Hepat. (Engl.-Prantl)*: 129, 1893 (Schiffner 1893a).

≡*Lejeunea eulopha* Taylor, *London J. Bot.* 5: 391, 1846 (Taylor 1846a). Type: Pacific Islands.

=*Lopholejeunea cocosensis* L.Clark, *Proc. Calif. Acad. Sci.*, ser. 4, 27(18): 605, 1953 (Clark 1953a), syn. fide Gradstein et al. (1994). Holotype: Costa Rica, Cocos I., Wafer Bay, *Howell 231* (CAS-372427, isotypes MO-2146986, UBC-B211388, WTU).

COSTA RICA. LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-141* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**).

COCOS I. S. loc. (Fosberg and Klawe 1966 as *Lopholejeunea cocosensis*; **Gradstein 1994**; Gradstein et al. 1994; Dauphin 1995; Lücking 1995); Cascada Yglesias, 10 m, 15 Feb 1994, *Dauphin 1139* (USJ, **Dauphin 1995, 1999, 2005**); Cascada Yglesias, 5°32′57″N, 87°03′56″W, 10 m, *Dauphin 1136*, det. G. Dauphin Mar 2021 (USJ-47450!, CR-4468322!, **this publication**); Cascada Yglesias, 5°32′57″N, 87°03′56″W, 10 m, *Dauphin 1139*, det. G. Dauphin Mar 2021 (USJ-471644!, CR-4468307!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 978*, det. G. Dauphin Apr 2021 (USJ-47536!, CR-4468412!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 978* (**Dauphin 1995, 1999, 2005**); Wafer Bay, 28 Jun 1932, *Howell 229 p.p.* (CAS, **Clark 1953a** as *Lopholejeunea cocosensis*); Wafer Bay, 28 Jun 1932, *Howell 231* (CAS-372427, MO, UBC, WTU, **TYPE** of *Lopholejeunea cocosensis*, **Clark 1953a** as *Lopholejeunea cocosensis*; **Geissler and Bischler 1985** as *Lopholejeunea cocosensis*; **Dauphin 2005**; **Zhu and Gradstein 2005**); Wafer Bay, 28 Jun 1932, *Walton Clark 221 p.p.* (CAS, **Clark 1953a** as *Lopholejeunea cocosensis*).

Also reported from West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, the Caribbean, Northern South America, Western South America, Brazil.

Lopholejeunea nigricans (Lindenb.) Schiffn., *Consp. Hepat. Arch. Ind.*: 293, 1898 (Schiffner 1898a).

≡*Lejeunea nigricans* Lindenb., *Syn. Hepat.* 3: 316, 1845 (Gottsche et al. 1845a). Type: Java.

=*Lejeunea muelleriana* Gottsche, *Mexik. Leverm.* 184, 1863 (Gottsche 1863), syn. fide Gradstein (1994). Type: Mexico.

≡*Lopholejeunea muelleriana* (Gottsche) Schiffn., *Bot. Jahrb. Syst.* 23(5): 599, 1897 (Schiffner 1897).

COSTA RICA. S. loc. (Bastos 2004). *CARTAGO: Oreamuno cantón, Irazú Volcán National Park, *Dauphin et al. 3550* (CR!, **this publication**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-229* (USJ, **Gradstein et al. 1994**; **Lücking 1995**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-129*, *92-130*, *92-195*, *92-360*, *92-519*, *92-568*, *92-584* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero, N side of Tortuguero National Park, S of town of Tortuguero, 10°30′N, 83°30′W, 17 Jan 1984, *Edelstein 49*, det. Dauphin May 2017 (MO-5263905!, **this publication**). PUNTARENAS: Buenos Aires cantón, Valle del Silencia, *Dauphin 1329* (GOET, **Zhu and Gradstein 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, 250 m, *Gradstein & Dauphin 9331* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). *SAN JOSÉ: Moravia cantón, La Palma, *Maxon & Harvey*, det. Dauphin Jun 2017 (MO-6168118!, **this publication**).

PANAMA. S. loc. (Lücking 1995; Bastos 2004). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Boquete distrito, Finca La Fortuna, 1,500–1,600 m, *Salazar Allen 773* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**). COCLÉ: La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 665*, *671*, *672*, *681*, *682* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,000 m, *Salazar Allen & Gradstein 9407*, *9421*, *9454 p.p.* (PMA, **Gradstein 1994**; **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Lopholejeunea muelleriana*). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, *Salazar Allen & Gradstein 9454* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Capira distrito, Parque Nacional Altos de Campana, *Salazar Allen et al. 9421* (U, **Zhu and Gradstein 2005**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, *Salazar Allen & Gradstein 9407* (PMA, U, **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30836* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995, 1999); Chatham Bay, 28 Jun 1932, *Howell 225 p.p.* (CAS, **Clark 1953a** as *Lopholejeunea muelleriana*); Wafer Bay, 28 Jun 1932, *Howell 226 p.p.*, *241* (CAS, **Clark 1953a** as *Lopholejeunea muelleriana*; **Gradstein 1994**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lopholejeunea subfusca (Nees) Schiffn., *Bot. Jahrb. Syst.* 23(5): 593, 1897 (Schiffner 1897) var ***subfusca.***

≡*Jungermannia subfusca* Nees, *Enum. Pl. Crypt. Javae*: 36, 1830 (Nees 1830). Type: Java.

≡*Phragmicoma sagrana* Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 464, 1842 (Montagne 1842b), syn. fide Verdoorn (1934a). Type: Cuba.

=*Lopholejeunea sagrana* (Mont.) Steph., *Hedwigia* 30(5): 202, 1891 (Stephani 1891a).

GUATEMALA. ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,100–1,300 m, 2002 (**Andersohn 2004**). ?BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (Freire et al. 2005 as *Lopholejeunea* cf. *subfusca*) Note: We are not aware of any positively identified specimen from Baja Verapaz.

BELIZE. S. loc. (**Fulford 1938** as *Lopholejeunea sagrana*; Frye and Clark 1947 as *Lopholejeunea* '*sagraeana*'; Mizutani 1961; Kamimura 1974; Whittemore and Allen 1996; Bapna and Kachroo 2000b).

HONDURAS. S. loc. (Miller et al. 1983 as *Lopholejeunea sagrana*; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55347*, *55349*, *55353*, *55515*, *55559* (US, **Herzog 1951** as *Lopholejeunea* '*Sagraeana*'; **Gradstein 1994**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Lopholejeunea sagrana*).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *Sillett 8-3*, *8-4*, *8-6*, *8-7*, *42585*, *42587*, *42588* (U, **Gradstein et al. 1994**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, 250 m, *Gradstein & Dauphin 9331* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, Puerto Escondido, 10 m, *Gradstein & Dauphin 9374* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc., *Steyermark & Allen 16946* (MO, **Stotler et al. 1998**); Canal Zone (Schäfer-Verwimp 2014). BOCAS DEL TORO: Bocas del Toro distrito, Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34176/A* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31055*, *31061* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, El Real from Pirre 1 to Pirre 2, *Salazar Allen & Gradstein 9207* (PMA, **Stotler et al. 1998**); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, *Salazar Allen & Gradstein 9454* (PMA, U, **Zhu and Gradstein 2005**); La Chorrera distrito, Barro Colorado Island (**Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Shattuck* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Zatek & Shattuck* (**Haynes 1933** as *Lopholejeunea* '*Sagraeana*').

COCOS I. Boca Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 948*, det. G. Dauphin Mar 2021 (USJ-47207!, CR-4468308!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, *Dauphin 926*, det. G. Dauphin Mar 2021 (USJ-47185!, CR-4468306!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, *Dauphin*, det. G. Dauphin Mar 2021 (USJ-47193!, CR-4468310!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10–20 m, 15 Feb 1994, *Dauphin* (USJ, **Dauphin 1995**, **1999**, **2005**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Lophonardia R.M.Schust., *Phytologia* 39(4): 244, 1978 (Schuster 1978a).

Lophonardia jamesonii (Mont.) L.Söderstr. et Váňa, *Phytotaxa* 81(1): 19, 2013 (Söderström et al. 2013c).

≡*Jungermannia jamesonii* Mont., *Syll. Gen. Sp. Crypt.*: 60, 1856 (Montagne 1856b). Type: Ecuador.

≡*Andrewsianthus jamesonii* (Mont.) Váňa, *Acta Bot. Hung.* 29(1/4): 147, 1983 (Gradstein et al. 1983).

≡*Lophozia jamesonii* (Mont.) R.M.Schust., *Beih. Nova Hedwigia* 119: 279, 202 (Schuster 2002).

=*Lophozia kilimanjarica* S.W.Arnell, *Ark. Bot.*, ser. 2, 3(16): 539, 1956 (Arnell 1956c), syn. fide Gradstein et al. (1983). Type: Tanzania.

≡*Andrewsianthus kilimanjaricus* (S.W.Arnell) Grolle et Váňa, *J. Hattori Bot. Lab.* 48: 228, 1980 (Váňa 1980).

COSTA RICA. S. loc. (Váňa and Watling 2004c as *Lophozia jamesonii*; Gradstein and Holz 2005 as *Andrewsianthus jamesonii*; Gradstein 2021); Cordillera de Talamanca (Holz 2003 as *Andrewsianthus jamesonii*; **Holz and Gradstein 2005b** as *Andrewsianthus jamesonii*). ALAJUELA: Poás Volcano, 2,520 m, 31 Jul 1977, *Griffin & Araya 58*, *61*, *64*, det. Váňa (USJ, FLAS, PRC, Váňa **1980** as *Andrewsianthus kilimanjaricus*; **Morales and Griffin 1983** as *Andrewsianthus kilimanjaricus*; **Morales 1991** as *Andrewsianthus jamesonii*; **Dauphin 2005** as *Andrewsianthus jamesonii*).

PANAMA. S. loc. (Schuster 2002 as *Lophozia* cf. *jamesonii*; Váňa and Watling 2004c as *Lophozia jamesonii*). CHIRIQUÍ: Boquete distrito, on top of Volcán Barú, 1,800–3,400 m, *Allen 9077*, det. Whittemore 1990 (MO-3678098!, **Stotler et al. 1998** as *Andrewsianthus jamesonii*).

Also reported from West-Central Tropical Africa, East Tropical Africa, Mexico, Northern South America, Western South America.

Lophonardia laxifolia (Mont.) L.Söderstr. et Váňa, *Phytotaxa* 81(1): 20, 2013 (Söderström et al. 2013c).

≡*Sarcocyphos laxifolius* Mont., *Ann. Sci. Nat. Bot.*, sér. 3, 4: 346, 1845 (Montagne 1845). Type: Chile.

≡*Lophozia laxifolia* (Mont.) Grolle, *J. Jap. Bot.* 39(6): 173, 1964 (Grolle 1964c).

?GUATEMALA. S. loc. (Ellis et al. 2014b). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (León et al. 1998 as *Lophozia laxifolia*; Gradstein 1999a as *Lophozia laxifolia*; Gradstein and Holz 2005 as *Lophozia laxifolia*; Ellis et al. 2014b); Cordillera de Talamanca (Holz 2003 as *Lophozia laxifolia*; **Holz and Gradstein 2005b** as *Lophozia laxifolia*). CARTAGO: Talamanca cantón, Chirripó National Park, Lago Dikevi, 3,600 m, *Dauphin & Valerio 1250* (**Gradstein et al. 1994** as *Lophozia laxifolia*; **Dauphin 2005** as *Lophozia laxifolia*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,950 m, *Gradstein 9678*, *9731* (U, USJ, **Gradstein et al. 1994** as *Lophozia laxifolia*; **Dauphin 2005** as *Lophozia laxifolia*).

Also reported from Southern Africa, Mexico, Northern South America, Western South America, Southern South America, Subantarctic Islands.

Lophozia (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

Lophozia guttulata (Lindb. et Arnell) A.Evans, *Proc. Wash. Acad. Sci.* 2: 302, 1900 (Evans 1900b).

≡*Jungermannia guttulata* Lindb. et Arnell, *Kongl. Svenska Vetensk.-Akad. Handl.*, n.s., 23(5): 51, 1889 (Lindberg and Arnell 1889). Type: Siberia.

=*Lophozia longiflora* auct., non Nees, *Naturgesch. Eur. Leberm.* 2: 95, 1836 (Nees 1836).

GUATEMALA. S. loc. (Gradstein and Váňa 1994 as *Lophozia longiflora*; Paton 1999 as *Lophozia longiflora*; Gradstein et al. 2001b as *Lophozia longiflora*; Schäfer-Verwimp and Pócs 2009 as *Lophozia longiflora*). HUEHUETENANGO: San Mateo Ixtatán municipio, above San Mateo, 9,700 ft, 3 Jan 1946, *Sharp 4949* (TENN, **Gradstein and** Váňa **1987** as *Lophozia longiflora*). QUETZALTENANGO: San Carlos Sija municipio, Getenagre near Sija, 9,500 ft (2,896 m), 1 Jan 1945, *Sharp 1133* (TENN, **Gradstein and** Váňa **1987** as *Lophozia longiflora*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Eastern Asia, Malesia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Subantarctic Islands, Antarctic Continent.

Lunularia Adans., *Fam. Pl. (Adanson)* 2: 15, 1765 (Adanson 1763).

Lunularia cruciata (L.) Dumort. ex Lindb., *Not. Sällsk. Fauna Fl. Fenn. Förh.* 9: 298, 1868 (Lindberg 1866).

≡*Marchantia cruciata* L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753). Type: Europe.

***GUATEMALA.** *SACATEPÉQUEZ: San Lucas Sacatepéquez municipio, Caserío El Manzanillo, carretera hacia el Caserío Chicamen y ruta al municipio de Mixco, 14°37′46.9″N 90°38′07.7″W, 2,000 m, 1 Jan 2021, *Pérez & García 6384*, det. Pérez 2021 (USCG-48201!, **this publication**).

COSTA RICA. S. loc. (Bischler-Causse et al. 2005). PUNTARENAS: S. loc., 1,095 m, *Dauphin 1815*, *1817* (CR, **Dauphin 2005**); Coto Brus cantón, Finca Las Cruces, San Vito de Java, Jardín Botánico Wilson, *Morales 751 p.p.* (**Morales 1991**; **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, New Zealand, Northeastern Pacific, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Western South America, Brazil, Southern South America, Subantarctic Islands.

Luteolejeunea Piippo, *Acta Bot. Fenn.* 132: 56, 1986 (Piippo 1986).

Luteolejeunea herzogii (Buchloh) Piippo, *Acta Bot. Fenn.* 132: 57, 1986 (Piippo 1986).

≡*Stictolejeunea herzogii* Buchloh, *Nova Hedwigia* 3(4): 515, 1961 (Buchloh 1961). Type: Peru.

≡*Lepidolejeunea herzogii* (Buchloh) Grolle et Gradst., *Beih. Nova Hedwigia* 80: 217, 1985 (Gradstein 1985a).

COSTA RICA. S. loc. (Gradstein et al. 2001b); S. loc., *Schäfer-Verwimp & Holz SV/H-0294/B* (GOET, JE, **Wilson et al. 2007**; **Heinrichs et al. 2012c**, **2014a**, **2014b**, **2014c**; **Czumay et al. 2013**; **Dong et al. 2013**; **Ye et al. 2013**; **Schäfer-Verwimp et al. 2014**; **Bechteler et al. 2016a**, **2016c**; **Scheben et al. 2016**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Sierra et al. 2018b**, **Ye and Zhu 2018**; **Zhu and Shu 2018**; **Ye and Wei 2021**; **Shu et al. 2022**). ALAJUELA: Upala cantón, Rincón de La Vieja National Park, Sector Santa María, "Los Naranjos" near Provision rivulet, 10°46′20″N, 85°17′15″W, 920 m, *Dauphin 2393* (CR, **Dauphin et al. 1998**; **Dauphin 2005**).

PANAMA. S. loc. (Dauphin et al. 1998; Linares and Uribe 2002). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein*

& Salazar Allen (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, from camping site of Rancho Mojado, 1,150 m, *Salazar Allen & Gradstein 9251* (PMA, **Stotler et al. 1998**). PANAMA: Panamá distrito, La Eneida, Cerro Jefe region, 750 m, *Maas & Dressler 691* (JE, U, **Gradstein 1985a** as *Stictolejeunea herzogii*; **Piippo 1986**; **Stotler et al. 1998**).

Also reported from Western South America.

Macrocolura R.M.Schust., *J. Hattori Bot. Lab.* 75: 233, 1994 (Schuster 1994).

Macrocolura sagittistipula (Spruce) R.M.Schust., *J. Hattori Bot. Lab.* 75: 233, 1994 (Schuster 1994).

≡*Lejeunea sagittistipula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 304, 1884 (Spruce 1884). Type: Venezuela.

≡*Colura sagittistipula* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 933, 1916 (Stephani 1916a).

=*Lejeunea clavigera* Gottsche ex Schiffn., *Leberm., Forschungsr. Gazelle* 4(4): 36, 1890 (Schiffner 1890), syn. fide Grolle and Zhu (2002). Type: Cuba.

≡*Colura clavigera* (Gottsche ex Schiffn.) Jovet-Ast, *Rev. Bryol. Lichénol.* 42: 922, 1976 (Jovet-Ast 1976).

=*Colura lyrata* Steph., *Symb. Antill.* 2: 471, 1901 (Stephani 1901b), syn. fide Grolle and Zhu (2002). Type: Guadeloupe.

≡*Macrocolura lyrata* (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 75: 233, 1994 (Schuster 1994).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Colura clavigera*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, Sendero La Oropéndola (Dauphin 2005); Paraíso cantón, Tapanti National Park, im Orosi-Tal, Sendero La Oropendola, ~600 m, *Schäfer-Verwimp & Holz SV/H-0329* (JE, **Grolle and Zhu 2002**); Paraíso cantón, Tapantí National Park, Orosi Valley, Sendero "La Oropéndola," 600 m, 30 Dec 1999, *Holz CR 99-1349*, *SV/H-0345* (CR, GOET, JE, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Colura lyrata*).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34159/B*, *34164/b* (JE, **Schäfer-Verwimp 2014**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Altos de Cerro Azul, Sendero El Cantar, *Stotler & Crandall-Stotler 3486* (ABSH, PMA, **Stotler et al. 1998** as *Macrocolura lyrata*);

COCOS I. Boca Río Yglesias, 5°32′57″N, 87°03′56″W, 0 m, 15 Feb 1994, *Dauphin 1142* (USJ-47200, CR-4468399!, **Dauphin 1995**, **1999**, both as *Colura clavigera*, **2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Marchantia L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753).

Marchantia berteroana Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 21, 1834 (Lehmann 1834). Type: Juan Fernández.

COSTA RICA. S. loc. (Bischler-Causse 1989, 1993; Gradstein 1999a; Perold 1999; Bednarek-Ochyra et al. 2000; Grolle 2002; Dauphin 2005; Gradstein and Holz 2005; Váňa and Gremmen 2005; Santos 2008; Váňa and Engel 2013; Ochyra et al. 2014; Váňa et al. 2014c); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Pan-American Highway, 3,100 m, 1976, *Meléndez* (PC, **Bischler 1984**; **Bischler-Causse et al. 2005**). ALAJUELA: Poás National Park, 2,600 m, *Kupper 843* (JE, **Bischler 1984**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Potrero del Alto, 2,463 m, *Pittier 6021* (G, **Bischler 1984**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**); Poás, 1979, *Jovet-Ast* (PC, **Bischler 1984**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Oreamuno cantón, Irazú Volcán, 2,843 m, *Pittier 12* (G, **Bischler 1984**; **Bischler-Causse et al. 2005**). SAN JOSÉ: Cerro Muerte, *Schulthes 12032* (FH, **Bischler-Causse et al. 2005**); Pan-American Highway sur, 3,100 m, *Meléndez 1976* (PC, **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

Also reported from South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Mexico(?), Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands, Antarctic Continent.

Marchantia chenopoda L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753). Type: Martinique.

=*Marchantia pittieri* Steph. ex Bonner, *Candollea* 14: 109, 1953 (Bonner 1953a), syn. fide Bischler (1984). Lectotype (Bischler 1984: 73 as "holotype"): Costa Rica: San Francisco de dos Rios, Aug 1891, *Pittier 15563*, ex hb. J. Cardot (G-00120622 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=165667&lang=en).

GUATEMALA. S. loc. (Svihla 1942; Hässel 1962; Vianna 1970; Freire et al. 2012); S. loc., *Donnell Smith* (**Underwood 1895**); S. loc., *Friedrichsthal 1110*, *93* (UC, W, G, **Bischler 1984**); S. loc., *Godman & Sabin* (NY, **Evans 1917a**); S. loc., *Godman & Salomon* (BM, **Bischler 1984**); S. loc., *Kunze 93* (BM, **Bischler 1984**); S. loc., *Standley 66901* (NY, Pérez 2009); S. loc., 1,839–1,841 m, *Friedrichstahl*, det. Bischler 1962 (W-201707326!, **this publication**). ALTA VERAPAZ: S. loc., *Standley 69496* (NY, Pérez 2009); Cobán municipio, Finca San Pedro, 4,300 ft (1,310 m), *Svihla 45-619*, *45-621*, *45-622*, *45-624*, *45-631*, *45-632* (hb. Fulford, **Bischler 1984**); Cobán, 1,350 m, *Türckheim 6074* (NY, **Evans 1917a**; **Bischler 1984**); Senahú municipio, Finca Sepacuité, 4 Mar 1902, *Cook & Griggs 83*, *141*, *394* (US, Y, **Evans 1917a**); Tactic municipio, E of Tactic, 1,300 m, *Steyermark 44011* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**); trail from Pangós to Sepacuité, Jan 1908, *Maxon & Hay 3111* (US, Y, **Evans 1917a**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 20*, *65*, *74*, *123*, *135*, *159*, *247*, *255*, *381*, *401*, *403*, *404*, *407*, *442*, *447*, *457*, *486*, *495*, *510* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire 2006**; **Freire et al. 2005**). QUETZALTENANGO: S. loc., *Pagán 68012* (NY, Pérez 2009); Las Mercedes, *Rodriguez 8* (PC, **Bischler 1984**); Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico

Zunil, 14°45′04.0″N, 91°28′35.8″W, 27 Jan 2006, *Quedensley 3841*, det. Dauphin Sep 2017 (MO, W-0089076!, **this publication**); Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 12 Dec 2004, *Quedensley 1411*, det. Dauphin Sep 2017 (MO, W-0089075!, **this publication**). SACATEPÉQUEZ: Chicacao municipio, Suchiate, Finca El Naranjo, *Svihla 45-659*, *45-665* (hb. Fulford, **Bischler 1984**). SAN MARCOS: S. loc., *Standley 68841* (NY, Pérez 2009). SANTA ROSA: S. loc., 2,500 ft (762 m), *Heyde & Lux 6293* (BM, G, **Bischler 1984**); S. loc., Sep 1894, *Heyde & Lux 6293* (NY, **Evans 1917a**). SOLOLÁ: Santiago de Atitlan municipio, across lake Atitlan from Panujachel, *Svihla 45-689* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**; **Pérez 2009**). SUCHITEPÉQUEZ: S facing slopes of volcan Sta Clara, 1½–2 mi (2.4–3.2 km) W of Finca El Naranjo, 1,250 m, *Steyermark 46820*, *46821*, *46791* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**; **Pérez 2009**); San Pablo Jacopilas municipio, Chocola, *Morton 4099* (JE, **Bischler 1984**); San Pedrito, *Rodriguez 19* (PC, **Bischler 1984**); SW, lower slopes of Volcán Zunil, vicinity of finca Asturias, NE of Pueblo Nuevo, 1,200–1,300 m, *Steyermark 3531*, *9* (hb. Fulford, **Bischler 1984**).

HONDURAS. COMAYAGUA: S. loc., 600 m, *Standley & Chacon 5695* (hb. Fulford, **Bischler 1984**); Siguatepeque, *Yuncker et al. 6410*, *6411A*, *6415*, *6467*, *6486*, *6508*, *6509*, *6510*, *6511*, *6539*, *6636* (hb. Fulford, UT, **Bischler 1984**; **Bischler-Causse et al. 2005**). EL PARAÍSO: El Paraíso municipio, El Zamorano, 780–900 m, *Standley 2335* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**).

EL SALVADOR. CHALATENANGO: San Ignacio municipio, E slope of Los Esesmiles (Cerro el Pital), 2,130–2,160 m, *Tucker 1010* (G, PC, UC, **Bischler 1984**; **Bischler-Causse et al. 2005**). SAN SALVADOR: S. loc. (**Standley and Calderón 1925**); S. loc., *Standley 22684* (FH, **Bischler-Causse et al. 2005**).

NICARAGUA. MANAGUA: Managua municipio, Casa Colorada, S of Managua, 850 m, *Maxon et al. 7427* (JE, **Bischler 1984**); Managua municipio, S of Managua, *Maxon et al. 7427* (JE, **Bischler-Causse et al. 2005**); Ticuantepe municipio, Las Nubes, S of Managua, 800–900 m, *Maxon et al. 7485* (JE, **Bischler 1984**). *NUEVA SEGOVIA: San Fernando municipio, 7.6 km N of Ocotal-Jalapa highway, road toward Finca Las Brisas, 13°43′29″N, 86°22′15″W, 21 Dec 2012, *Stevens & Montiel 33711*, det. Brinda and Dauphin Jun 2017 (MO-6626251!, **this publication**). RIVAS: Volcán Ometepe, 1893, *Shimeck* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**).

COSTA RICA. S. loc. (**Bischler 1984**; Cole 1984; Hässel 1962; Vianna 1970); S. loc., *Hoffman 768* (G, **Bischler 1984**); S. loc., *Rémy 1836* (PC, **Bischler 1984**); Rio Paruara, 60 m, *Kupper 433* (JE, **Bischler 1984**). ALAJUELA: S. loc., 1,000 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**); Alajuela cantón, Poás Volcán, E slope, *Griffin & Eakin 88* (FLAS, **Morales 1991**; **Dauphin 2005**); Alajuela cantón, Poás Volcán, E slope, 6,000 ft (1,829 m), 25 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991**); Atenas, 16 Sep 1979, *Meléndez* (PC, **Bischler 1984**); Cuesta de La Vieja, camino a San Carlos, *Cook & Doyle 111* (US, Y, **Evans 1917a**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, 2 Aug 1940, *Haupt* (**Dauphin 2005**); Poás Volcano, 1,400 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**; **Bischler-Causse et al. 2005**); Poás Volcano, Potrero del Alto, 2,463 m, *Pittier 6021* (G, **Morales 1991**; **Dauphin 2005**); Zarcero cantón, Laguna de Alfaro Ruiz, *Rodrigues 289* (UC, **Bischler 1984**). CARTAGO: Jiménez cantón, Juan Viñas (Haupt 1942); Jiménez cantón, Juan Viñas, *Cook & Doyle 301* (US, Y, **Evans 1917a**; **Morales 1991**); Jiménez cantón, Juan Viñas, 1,100 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**); La Union cantón, Carpintero, Mt S of Cartago, *Stork 1379* (UC, **Bischler 1984**); Oreamuno cantón, Irazú Volcán, Atlantic side, 8 Jul 1941, *Svihla 41-466*, *41-468*, *41-478* (**Svihla 1942**; **Dauphin 2005**); Oreamuno cantón, Rio Reventado, 1979, *Jovet-Ast* (PC, **Bischler 1984**); Rio Macho, Planta del Rio Macho, 1979, *Jovet-Ast* (PC, **Bischler 1984**); Rio Turrialba (Haupt 1942); Río Turrialba, Mar 1896, *Smith* (NY, **Evans 1917a**; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Angostura, *Polakowsky* (**Polakowsky 1879**); Turrialba cantón, Angostura, Nov 1875, *Polakowsky 452* (**Polakowsky 1877**; **Bischler 1984**; **Morales 1991**); Turrialba cantón, Pavones, 700 m, 1979, *Meléndez* (PC, **Bischler 1984**); Turrialba cantón, Santa Cruz, 9 km NW of Turrialba, *Maas 778* (U, **Bischler-Causse et al. 2005**); Turrialba cantón, Tucurrique, La Angostura, *Kuntze 2102* (NY, **Evans 1917a**; **Morales 1991**; **Dauphin 2005**); Turrialba, 2,000 ft (610 m), *DeWolf 182* (BM, **Bischler 1984**; **Bischler-Causse et al. 2005**); Turrialba, *Volk 6/708* (JE, hb. Volk, **Bischler 1984**). HEREDIA: San Isidro cantón, Cerro de Las Lajas, 1,750 m, 1979, *Meléndez* (PC, **Bischler 1984**). LIMÓN: Limón cantón, Bananito, *Stork 1211* (UC, **Bischler 1984**; **Bischler-Causse et al. 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, *James, M. 2* (**Dauphin 2005**); Monteverde, 9 Jan 1965, *James, M. 2*, *7*, *23*, *24*, *25*, *26* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: S. loc. (BM, **Bischler 1984**); S. loc., *Haupt* (**Dauphin 2005**); S. loc., *Sarg* (G, **Bischler 1984**); S. loc., Jul 1875, *Polakowsky 298* (W, **Polakowsky 1877**; **Bischler 1984**; **Morales 1991**; **Dauphin 2005**); S. loc., 12 Aug 1979, *Jovet-Ast* (PC, **Bischler 1984**); Alajuelita (Haupt 1942); Alajuelita cantón, La Verbena, Aug 1894, *Tonduz 15562* (NY, Y, G, hb. Cardot, **Evans 1917a**; **Bonner 1953a** as *Marchantia pittieri*; **Bischler 1984**; **Morales 1991**; **Dauphin 2005**); Aserrí cantón, mountains S of village 5.5 (9 km) mi S of San José, 6,000 ft (1,829 m), 23 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**); Cerro La Cruz, 2,000 m, 1976, *Meléndez* (PC, **Bischler 1984**); Curridabat, 1,400 m, *Pittier 9*, *6035* (G, **Bischler 1984**; **Bischler-Causse et al. 2005**); Escazú cantón, Escazú, mountains 0.5 mi SW of village, 5,000–6,000 ft (1,524–1,829 m), 18 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991**); La Unión cantón, San Ramón de Tres Ríos, 1,600 m, 1976–1979, *Meléndez* (PC, **Bischler 1984**); La Unión cantón, San Ramón de Tres Ríos, Pizote, 1,900 m, *Meléndez* (PC, **Bischler 1984**); La Unión cantón, San Ramón de Tres Rios, Rio Tiribi, 1,800 m, *Kuhbier 1006* (JE, **Bischler 1984**); Moravia cantón, La Palma, 1,500–1,700 m, *Maxon & Harvey 7922* (JE, **Bischler 1984**); Moravia cantón, La Palma, *Pittier 6018*, *6024* (BM, G, **Stephani 1893c**; **Bischler 1984**; **Morales**

1991; **Dauphin 2005**); Moravia cantón, La Palma, 1,530 m, *Sarg* (G, **Bischler 1984**); Moravia cantón, La Palma, *Stork 1923* (UC, **Bischler 1984**); Moravia cantón, La Palma, *Valerio 23* (JE, **Bischler 1984**); Moravia cantón, La Palma, 1895, *Sarg & Roell* (JE, **Bischler 1984**); Moravia cantón, La Palma, May 1906, *Maxon 489* (US, Y, **Evans 1917a**; **Morales 1991**; **Dauphin 2005**); San Francisco dos Rios, May 1991, *Pittier 15563* (hb. Cardot, G, **Bonner 1953a** as *Marchantia pittieri*; **Bischler 1984** as *Marchantia pittieri*); San José cantón, Barrio Mexico, 14 Aug 1979, *Jovet-Ast* (PC, **Bischler 1984**); San José, *Haupt* (**Morales 1991**); San José, *Pittier 6004*, *6049* (BM, G, **Stephani 1893c**; **Bischler 1984**; **Morales 1991**; **Dauphin 2005**); San José-Gugos, 1,000 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**); Santa Ana cantón, El Rodeo, 26 Aug 1979, *Jovet-Ast* (PC, **Bischler 1984**); Vásquez de Coronado cantón, Camino a Cascajal de Coronado, *Jiménez 24*, *28* (CR, **Morales 1991**); Vásquez de Coronado cantón, San Isidro del General, NW de la ville, 1,100 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**); Vásquez de Coronado cantón, San Isidro, 13 Jul 1941, *Svihla 41-494*, *41-497*, *41-501*, *41-505* (**Svihla 1942**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado, 1,345 m, 1976, *Meléndez* (PC, **Bischler 1984**); vicinity of San José and La Palma, *Pittier* (**Haupt 1942**); W of Alto de la Palma, toward Cerro Zurquí, 1,500 m, *Horich 59043* (UC, **Bischler 1984**).

PANAMA. S. loc. (Haynes et al. 1923; Haupt 1942; Hässel 1962; Vianna 1970; Stotler et al. 1998); S. loc., *Seemann* (BM, NY, **Bischler 1984**). BOCAS DEL TORO: Changuinola distrito, camping site of Changuinola 1, *Salazar Allen 1693a* (PMA, **Stotler et al. 1998**); Continental Division at guard post, *Valdespino 868*, *870a* (PMA, **Stotler et al. 1998**; **Bischler-Causse et al. 2005**); SW of camping site, Técnicos Forestales, above Quebrada Chica, *Salazar Allen 1873* (PMA, **Stotler et al. 1998**). CHIRIQUÍ: S. loc. (NY, **Bischler 1984**); Boquete distrito, Bajo Chorro, *Salazar Allen 1184*, *1185*, *1189* (NY, PMA, **Bischler 1984**; **Bischler-Causse et al. 2005**); Boquete, 3 Sep 1940, *Svihla 40-404*, *40-418*, *40-433* (hb. Fulford, **Svihla 1942**; **Bischler 1984**; **Stotler et al. 1998**); Boquete, 3 Sep 1940, *Svihla 40-439*, *40-445* (**Svihla 1942**; **Bischler 1984**; **Stotler et al. 1998**); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Dam, *Hammel 2109*, *2110* (MO, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Hornito, along Quebrada Arena, on soil on banks of creek, *Spörle 1.16* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Tierras Altas distrito, Volcán, 2,193 m, *Forrest UCONN2676* (E, **Xiang et al. 2016**). COCLÉ: Antón distrito, El Valle de Antón, *Castillo 131* (PMA, **Stotler et al. 1998**); Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen & Beliz 1377* (NY, **Bischler 1984**); Antón distrito, El Valle de Antón, La Mesa, *Salazar Allen 1377* (PMA, **Stotler et al. 1998**). DARIÉN: S. loc. (Svihla 1942); S. loc., *Williams 1083* (NY, U, **Stotler et al. 1998**); S. loc., *Williams 1084* (NY, U, **Stotler et al. 1998**); S. loc., Mar 1908, *Williams 1803*, *1804* (NY, Y, **Evans 1917a**); Tres Bocas, *Kirkbride & Duke 1368* (MO, **Stotler et al. 1998**). PANAMA: Panamá distrito, Cerro Azul, on road to Lago Goofy, *Valdespino & Spörle 752* (PMA, **Stotler et al. 1998**; **Bischler-Causse et al. 2005**); Panamá distrito, Taboga, *Seemann* (NY, **Evans 1917a**; **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands(?).

Marchantia inflexa Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 43, 1838 (Montagne 1838). Type: Martinique.

≡*Marchantia papillata* subsp. *inflexa* (Nees et Mont.) R.M.Schust., *Hepat. Anthocer. N. Amer.* 6: 354, 1992 (Schuster 1992c).

=*Marchantia domingensis* auct., sensu, for example, A.Evans, *Trans. Connecticut Acad. Arts* 21(3): 269, 1917 (Evans 1917a), non Lehm. et Lindenb. 1834. Note: All reports of *Marchantia domingensis* (except the type from Santo Domingo) belong to *Marchantia inflexa* (Bischler 1984).

GUATEMALA. S. loc. (**Bischler 1984**; Schuster 1992c as *Marchantia papillata* subsp. *inflexa*); S. loc., *Watson* (**Underwood 1895** as *Marchantia linearis*); ALTA VERAPAZ: Black River, *Watson 295b* (H, NY, **Evans 1917a** as *Marchantia domingensis*; **Bischler 1984**; **Bischler-Causse et al. 2005**); Cobán municipio, Finca San Pedro, *Svihla 45-618*, *45-623* (hb. Fulford, **Bischler 1984**); Cobán, 1,310 m, 1892, *Türckheim 4960* (NY, FH, **Bischler-Causse et al. 2005**; **Pérez 2009**); Senahú municipio, Finca Sepacuité, 4 Mar 1902, *Cook & Griggs 82*, *255*, *403* (US, Y, **Evans 1917a** as *Marchantia domingensis*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 64*, *116*, *160*, *232*, *288*, *299*, *421*, *433* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PETÉN: Along Río Cancuen between El Cambio and mouth of Río Machaquilá, 75 m, *Steyermark 45912* (hb. Fulford, **Bischler 1984**). IZABAL: Along Rio Frio, 50–75 m, *Steyermark 41621* (hb. Fulford, **Bischler 1984**). QUETZALTENANGO: San Carlos Sija municipio, Getena area N of Sija, 7,600 ft (2,316 m), *Sharp 2092* (hb. Fulford, **Bischler 1984**).

EL SALVADOR. AHUACHAPÁN: S. loc., 700–1,100 m, *Standley & Padilla 2539* (hb. Fulford, **Bischler 1984**; **Bischler-Causse et al. 2005**). SAN VICENTE: S. loc. (**Standley and Calderón 1925** as *Marchantia domingensis*); S. loc., *Standley 21753* (FH, **Bischler-Causse et al. 2005**).

NICARAGUA. GRANADA: Granada municipio, environs de Grenade, 40 m, *Levy 1310* (PC, **Bischler 1984**; **Bischler-Causse et al. 2005**).

COSTA RICA. GUANACASTE: Cañas cantón, Finca Pacifica, 7 km NE of Cafas, *Delgadillo 2778* (MEXU, **Bischler-Causse et al. 2005**). HEREDIA: Pont du Rio Guácimo a Coradonga, 1901, *Tonduz* (G, **Bischler 1984**; **Bischler-Causse et al. 2005**); Sarapiquí, 1976, *Meléndez* (PC, **Bischler 1984**; **Morales 1991**; **Dauphin 2005**). LIMÓN: Entre el puente del Río Guácimo y Covadonga, *Tonduz 1901* (G, **Morales 1991**); Guácimo, *Tonduz 1901* (**Dauphin 2005**). PUNTARENAS: Entre San José y Quepos, 500 m, 1979, *Jovet-Ast* (PC, **Bischler 1984**); entre San José

y Quepos, 500 m, *Jovet-Ast 1979* (PC, **Morales 1991; Dauphin 2005**). SAN JOSÉ: S. loc., *Schultes 12062* (FH, **Bischler-Causse et al. 2005**).

PANAMA. S. loc. (Bischler 1984; Stotler et al. 1998). COCLÉ: Antón distrito, Club Campestre at El Valle, *Welch 19949* (hb. Fulford, **Bischler 1984; Bischler-Causse et al. 2005**). PANAMA: Panamá distrito, Rio Chagres, 14 Dec 1967, *Lewis et al. 3528* (MO, **Stotler et al. 1998**).

Also reported from North-Central USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America.

Marchantia paleacea Bertol., *Opusc. Sci.* 1: 242, 1817 (Bertoloni 1817). Type: Italy.

=*Marchantia domingensis* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 22, 1834 (Lehmann 1834), syn. fide Bischler (1984). Type: Dominican Republic. Note: All reports of *Marchantia domingensis* (except the type from Santo Domingo) belong to *Marchantia inflexa* (Bischler 1984).

GUATEMALA. S. loc. (Haynes et al. 1923; McAllister et al. 1932; Frye and Clark 1937; Svihla 1940; Jovet-Ast 1960; Hattori 1966, 1968a; Miller et al. 1983; Bapna and Kachroo 2000b; Alam and Srivastava 2009); S. loc., *Friedrichstahl* (UC, W, **Bischler 1984**); S. loc., *Türckheim 5819* (G, **Bischler 1984**); Insorio, *Rodriguez 13*, *16* (PC, **Bischler 1984**). ALTA VERAPAZ: Cobán (Schuster 1992c); Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009); Cobán, 1,310 m, 1892, *Türckheim 4960* (NY, FH, **Evans 1917a; Bischler-Causse et al. 2005**). *CHIMALTENANGO: S. loc., 25 Nov 1938, *Standley 57904*, det. Pagán (NY!, **this publication**). GUATEMALA: San Pedro Sacatepéquez, 1,440 m, 3 Mar 1921, *Rojas*, det. A. W. Evans (AGUAT, **Freire 2006**); San Raymundo, *Standley 63025* (FH, **Bischler-Causse et al. 2005; Pérez 2009**). HUEHUETENANGO: San Juan Ixcoy municipio, above San Juan Ixcoy, Sierra de los Cuchumatanes, 2,400 m, *Steyermark 50003* (hb. Fulford, **Bischler 1984**). SACATEPÉQUEZ: Antigua Guatemala municipio, 55 km N of Antigua, 2,360 m, *Volk 6/714* (JE, hb. Volk, **Bischler 1984; Bischler-Causse et al. 2005**); NW Antigua, *Standley 64635*, *64644* (FH, NY, **Bischler-Causse et al. 2005; Pérez 2009**). SOLOLÁ: Nahualá, *Champagne 2/03*, *7* (PC, **Bischler-Causse et al. 2005**); Panchel municipio, 2 km NE of Panajachel, 1,700 m, *Richards & Williams 3035* (UT, **Bischler 1984**).

HONDURAS. S. loc. (Schuster 1992c). COMAYAGUA: El Rosario municipio, El Banco, *Rodriguez 2574* (BM, UC, **Bischler 1984; Bischler-Causse et al. 2005**). *SANTA BÁRBARA: Base of E slope of Mount Santa Bárbara, ~7 km N of El Mochito, 14°55′N, 88°07′W, 24 Nov 1991, *Allen 11692*, det. Whittemore 1992 (MO-3965015!, **this publication**).

COSTA RICA. S. loc. (Bischler-Causse 1989; Cole 1984); Cordillera de Talamanca, route internationale, 1,800 m, 1979, *Jovet-Ast* (PC, **Bischler 1984; Bischler-Causse et al. 2005**). ALAJUELA: Poás Volcano, 1979, *Jovet-Ast* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 3 Nov 2010, *Norris 110369* (UC, **Norris et al. 2017**); Zarcero cantón, Laguna de Alfaro Ruiz, *Rodrigues 289* (UC, **Bischler 1984; Morales 1991; Bischler-Causse et al. 2005; Dauphin 2005**). CARTAGO: Oreamuno cantón, Rio Reventado, 1979, *Jovet-Ast* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**); Paraíso cantón, Río Macho, represa Tapantí, 1979, *Jovet-Ast* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**). HEREDIA: Barva cantón, San Rafael, San José de la Montana, 1,650 m, 1976, *Meléndez* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**). SAN JOSÉ: S. loc., *Standley 41248* (FH, **Bischler-Causse et al. 2005**); S. loc., *Schulthes 12062* (FH, **Bischler-Causse et al. 2005**); Cerro La Cruz, 2,000 m, *Meléndez* (PC, **Bischler 1984**); Herrau, *Pittier 8* (G, **Bischler 1984**); La Unión cantón, San Ramón de Tres Ríos, 1,600 m, 1976–1979, *Meléndez* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**); La Unión cantón, San Ramón de Tres Ríos, Pizote, 1,900 m, *Meléndez* (PC, **Bischler 1984**); Santa Ana, 1979, *Meléndez* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**); Sierra de Talamanca, 2,200 m, 1979, *Jovet-Ast* (PC, **Bischler 1984; Morales 1991; Dauphin 2005**).

Also reported from Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Northeast Tropical Africa, Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, New Zealand, North-Central USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil(?), Southern South America(?).

Marchantia papillata Raddi, Critt. Brasil.: 20, 1822 (Raddi 1822) subsp. ***papillata***. Type: Brazil.

GUATEMALA. S. loc. (Svihla 1941). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Western South America, Brazil, Southern South America, Subantarctic Islands.

Marchantia plicata Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 43, 1838 (Montagne 1838). Type: Bolivia.

GUATEMALA. QUICHÉ: 6 km N Quiché, 2,870 m, *Volk 6/715* (JE, hb. Volk, **Bischler 1984; Bischler-Causse et al. 2005; Pérez 2009**). SAN MARCOS: Tajumulco municipio, NW slopes of Volcán Tajumulco, 2,300–2,800 m, *Steyermark 36894* (hb. Fulford, **Bischler 1984; Bischler-Causse et al. 2005; Pérez 2009**).

COSTA RICA. S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); S. loc., 1976, *Meléndez* (PC, **Bischler 1984; Morales 1991**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). HEREDIA: Barva cantón, Volcán Barva, 2,400 m, *Valerio 24* (JE, **Bischler 1984; Bischler-Causse et al. 2005; Dauphin 2005; Morales 1991**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Nueva Suiza, *D'Arcy 5315* (MO, **Stotler et al. 1998**).

Also reported from Mexico, Northern South America, Western South America, Southern South America.

Marchantia polymorpha L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753), s. lat. Type: Europe.

≡*Marchantia polymorpha* A *communis* Nees, *Naturgesch. Eur. Leberm.* 4: 65, 1838 (Nees 1838a). Type: Europe.

=*Marchantia latifolia* Gray, *Nat. Arr. Brit. Pl.* 1: 682, 1821 (Gray 1821). Type: Italy.

Note: Bischler-Causse et al. (2005: 229) have several reports of *Marchantia polymorpha* for Guatemala. The species was not reported from Costa Rica by Bischler (1984) or by Bischler-Causse et al. (2005). It is difficult to judge what subspecies the reports belong to. The only report of a subspecies is the mention by Damsholt (2002) as *Marchantia latifolia* (=subsp. *ruderalis*).

GUATEMALA. HUEHUETENANGO: San Rafael Petzal, region of Chemal, S Cuchumatanes, 3,300 m, *Standley 81104* (UC, **Bischler 1984**). QUETZALTENANGO: Zunil municipio, Fuentes Georginas, Volcán Zunil, *Standley 67420* (FH, NY, **Bischler-Causse et al. 2005**; **Pérez 2009**); Zunil municipio, road from Aldea Chuimucubal, NW slopes of Pico Zunil, 14°45′56.35″N, 91°28′14.69″W, 14 Jan 2006, *Quedensley 4028*, det. Dauphin Sep 2017 (MO, W-0089077!, **this publication**). SACATEPÉQUEZ: Finca Carmona, SE of Antigua, *Standley 63692* (FH, **Bischler-Causse et al. 2005**; **Pérez 2009**). SAN MARCOS: Puente de Nauatl, 22 Feb 1939, *Standley 66231*, det. Pagán (NY, Pérez 2009). ?SOLOLÁ: Cumbre Alaska, carretera a Quetzaltenango, 3,000 m, *Véliz* (BIGU, Freire 2006 as *Marchantia* cf. *polymorpha*). Note: We are not aware of any positively identified specimen from Sololá.

EL SALVADOR. CHALATENANGO: San Ignacio municipio, E slope of Los Esesmiles (Cerro el Pital), 2,130–2,160 m, *Tucker 1019* (G, PC, UC, **Bischler 1984**; **Bischler-Causse et al. 2005**).

COSTA RICA. S. loc. (Bischler 1984; Damsholt 2002 as *Marchantia latifolia*); S. loc., *Pittier* (**Stephani 1899d** as *Marchantia polymorpha communis*). ALAJUELA: S. loc., 1891–1896, *Durand & Pittier* (**Morales and Griffin 1983**); Poás (Svihla 1942 as *Marchantia polymorpha communis*; Schuster 1992c); Poás Volcano, *Pittier 602* (**Evans 1917a**); Poás Volcano, 2 Aug 1940, *Haupt* (**Dauphin 2005**); Poás Volcano, 1942, *Haupt* (**Morales and Griffin 1983**); Poás Volcano, Potrero del Alto, *Haupt* (**Morales 1991**); Poás Volcano, Potrero del Alto, 2,463 m, *Pittier 6021* (G, **Stephani 1893c**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Potrero del Alto, *Pittier* (Haupt 1942 as *Marchantia polymorpha communis*). CARTAGO: Oreamuno cantón, Irazú Volcán, Atlantic side, 8 Jul 1941, *Svihla 41-465*, *41-469*, *41-475* (**Svihla 1942**; **Morales 1991**; **Dauphin 2005**). HEREDIA: Barva cantón, Barva Volcano, W slope, 4,500 ft (1,372 m), 2 Aug 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Stotler et al. 1998). CHIRIQUÍ: Boquete distrito, Alto Quiel, Finca de la Fortuna, *Salazar Allen 775* (PMA, **Bischler-Causse et al. 2005**); Boquete distrito, Finca Lérida, Palo Alto, 1,700–1,800 m, *Salazar Allen 798* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Tierras Altas distrito, Cerro Punta, Alto de Pineda, 8,000–8,400 ft (2,438–2,560 m), *Salazar Allen 1108*, *1124* (PMA, **Stotler et al. 1998**; **Bischler-Causse et al. 2005**); Tierras Altas distrito, Cerro Punta, Las Cumbres, 1,500 m, *Salazar Allen 1034*, *1045* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, El Aguacatal, *Salazar Allen 1178* (PMA, NY, **Bischler 1984**; **Stotler et al. 1998**; **Bischler-Causse et al. 2005**); Tierras Altas distrito, Las Nubes, *Mori & Bolten 7264* (MO, **Stotler et al. 1998**); Tierras Altas distrito, Volcán, above Chorro, *Salazar Allen & Béliz 1224* (PMA, **Stotler et al. 1998**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa(?), Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands, Antarctic Continent(?).

***Marchesinia* Gray, *Nat. Arr. Brit. Pl.* 1: 689, 1821 (Gray 1821).**

Marchesinia bongardiana (Lehm. et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 405, 1877 (Trevisan 1877).

≡*Lejeunea bongardiana* Lehm. et Lindenb., *Pugillus* 7: 18, 1838 (Lehmann 1838). Type: Brazil.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, 2003, *Dauphin 3212* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Marchesinia brachiata (Sw.) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a) var. ***brachiata***.

≡*Jungermannia brachiata* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

=*Phragmicoma guilleminiana* Mont., *Ann. Sci. Nat., Bot.*, ser. 2, 16: 128, 1841 (Montagne 1841), syn. fide Gradstein (1994). Type: Brazil.

=*Marchesinia saccata* Steph., *Sp. Hepat.* 5: 151, 1912 (Stephani 1912a), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype"): Costa Rica, Cartago "Alajuela," Rio Naranjo [=Juan Viñas], 1893, *Tonduz*, hb. Boissier 3091 (G-00067584 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119253&lang=en, isolectotypes G-00067585, G-00064939).

≡*Marchesinia brachiata* (Sw.) Schiffn. var. *saccata* (Steph.) Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 137, 1951 (Herzog 1951).

=*Marchesinia denticulata* Steph., *Sp. Hepat.* 5: 153, 1912 (Stephani 1912a), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype") if not holotype: Panamá, Chiriquí, *Hélion* (G-00069527 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119281&lang=en).

=*Marchesinia trollii* Herzog, *Ann. Bryol.* 5: 137, 1932 (Verdoorn 1932), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype"): Panama. Peninsula Azuero, Cerro Canajagua, *Troll s.n.*, Verdoorn (ed.), Hep. Sel. Crit. 156 (JE-04001746 https://je.jacq.org/JE04001746, isolectotypes JE-04001747 https://je.jacq.org/JE04001747, JE-04001748 https://je.jacq.org/JE04001748, B, BR, FH, G, JE, M NY, S, U, US, YU).

=*Marchesinia brachiata* (Sw.) Schiffn. f. *dentata* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 137, 1951 (Herzog 1951), nom. inval. (ICN2018 2018 Art. 38.1(a); no description). Original material: Costa Rica, La Palma, Province of San José, altitude about 1,600 m, 17 March 1924, *Standley 38050* (US-04660155 http://n2t.net/ark:/65665/337905fb6-d0d7-4f91-9b29-7ea051ccf6ef).

=*Marchesinia brachiata* (Sw.) Schiffn. f. *intermedia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 137, 1951 (Herzog 1951), nom. inval. (ICN2018 2018 Art. 38.1(a); no description). Original material: Costa Rica, Viento Fresco, Provincia de Alajuela, altitude 1,600–1,900 m, 13 Feb 1926, *Standley & Torres 47975* (US-04660154 http://n2t.net/ark:/65665/3fc928d6d-8aae-4c27-92bf-b3a0628f51e6).

=*Marchesinia longirostris* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 138, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype"): Costa Rica, Guanacaste: Tilarán, *Standley 44309* (JE-04001750 https://je.jacq.org/JE04001750, isolectotypes B-300025480 https://herbarium.bgbm.org/object/B300025480, US-02482525 http://n2t.net/ark:/65665/3cda41101-edf0-4967-b917-5202c208db43).

=*Marchesinia longirostris* Herzog var. *rivularis* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 138, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype"): Costa Rica, Cartago: Rio Reventado, 1,460–1,650 m, 26 Feb 1926, *Standley 49561* (JE-04001751 https://je.jacq.org/JE04001751, isolectotypes B-300025481 https://herbarium.bgbm.org/object/B300025481, US-00070855 http://n2t.net/ark:/65665/3b03522e2-efa7-4473-bccc-7c4c122ebd95).

=*Marchesinia minor* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 137, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 106 as "holotype"): Costa Rica, Guanacaste: Tilarán, *Standley 44393* (JE-04001752 https://je.jacq.org/JE04001752, isolectotype US-02482550 http://n2t.net/ark:/65665/39f497ced-0544-45b2-a053-1a360d8947aa).

GUATEMALA. S. loc. (Bastos 2004). ALTA VERAPAZ: Cobán, Las Victorias National Park, 1,100–1,300 m, 2002 (**Andersohn 2004**); Senahú municipio, Finca Mocca, 1920, *Johnson 120* (YU, **Gradstein 1994**; **Freire 2006**; **Pérez 2009**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 23*, *128* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). QUICHÉ: S. loc., *Pérez 2204* (USCG, Pérez 2009).

EL SALVADOR. S. loc. (Bastos 2004); S. loc., *Büttner 1889* (G, **Gradstein 1994**).

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, road from Siuna to El Dos, 13°46′N, 84°47′W, 12 Dec 1980, *Stevens 18719-B*, det. Dauphin May 2017 (MO-5228169! http://tropicos.org/specimen/90103080, **this publication**). *CHONTALES: Cuapa municipio, Cerro Oluma, 12°18′00″N, 85°23′43″W, 21 Jan 2010, *Stevens & Duarte 29130*, det. Dauphin May 2017 (MO-6169535! http://tropicos.org/specimen/100254621, **this publication**); San Pedro Lóvago municipio, 7.7 km N of Santo Tomás, road to San Pedro Lóvago, 12°07′04″N, 85°08′07″W, 17 May 2010, *Stevens & Montiel 30592*, det. Dauphin May 2017 (MO-6234092!, **this publication**).

COSTA RICA. S. loc. (**Stephani 1912a** as *Marchesinia saccata*; Cole 1982, 1983; **Geissler and Bischler 1985** as *Marchesinia saccata*; **Fulford and Sharp 1990** as *Marchesinia longirostris* var. *rivularis*; Bastos 2004); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851** as *Phragmicoma guilleminiana*); S. loc., *Oersted* (YU, G, S, **Hampe 1851b** as *Phragmicoma guilleminiana*; **Polakowsky 1879** as *Phragmicoma guilleminiana*). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47975* (**Herzog 1951** as *Marchesinia brachiata* f. *intermedia*; **Geissler and Bischler 1985** as *Marchesinia brachiata* f. *intermedia*; **Morales 1991**; **Dauphin 2005**). CARTAGO: Jiménez cantón, Juan Viñas (Rio Naranjo), 1893, *Tonduz*, hb. Boissier 3091 (G-00067584 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=119253&lang=en, **TYPE** of *Marchesinia saccata*); Jiménez cantón, Rio Naranjo, *Tonduz 15575*, *15683* (G, **Gradstein 1994**); Oreamuno cantón, Rio Reventado, *Standley 49651* (**Morales 1991** as *Marchesinia longirostris*); Oreamuno cantón, Río Reventado, N of Cartago, 1,460–1,650 m, *Standley 49561* (JE-04001751 https://je.jacq.org/JE04001751, B, US, **TYPE** of *Marchesinia longirostris* var. *rivularis*, **Herzog 1951** as *Marchesinia longirostris* var. *rivularis*; **Geissler and Bischler 1985** as *Marchesinia longirostris* var. *rivularis*); Turrialba cantón, Guayabo national monument, about 40 km E San Jose near Turrialba, SE slope of Turrialba volcano, 9°59′N, 83°43′W, 1,400 m, May 1992, *Lücking 92-150* (G, **Geissler 1997**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3353* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 2457* (CR, **Dauphin 2005**); Tilarán, 500–600 m, *Standley 44309* (JE-04001750 https://je.jacq.org/JE04001750, B, US, **TYPE** of *Marchesinia longirostris*, **Herzog 1951** as *Marchesinia longirostris*; **Geissler and Bischler 1985** as *Marchesinia longirostris*; **Morales 1991** as *Marchesinia longirostris*); Tilarán, 500–600 m, *Standley 44393* (JE-04001752, **TYPE** of *Marchesinia minor*, **Herzog 1951** as *Marchesinia minor*; **Geissler and Bischler 1985** as *Marchesinia minor*; **Morales 1991** as *Marchesinia minor*). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49065*, *49721*, *50019* (YU, **Herzog 1951** as *Marchesinia brachiata* var. *saccata*; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Fila Cruces, *Dauphin 2044* (CR, **Dauphin 2005**); Coto Brus cantón, Parque Internacional La Amistad, Pittier, 1,700 m, *Dauphin 1416* (GOET, CR, **Dauphin 2005**); Coto Brus, *Sipman 11936* (U, **Gradstein 1994**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al.**

1995); Monteverde, 1962, *James* (US, **Gradstein 1994**). SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48100*, *48101*, *48181* (**Herzog 1951** as *Marchesinia brachiata* var. *saccata*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Maxon 474* (NY, YU, **Gradstein 1994**); Moravia cantón, La Palma, *Standley 28050* (B, **Gradstein 1994**); Moravia cantón, La Palma, 1,600 m, *Standley 38050* (**Herzog 1951** as *Marchesinia brachiata* f. *dentata*; **Geissler and Bischler 1985** as *Marchesinia brachiata* f. *dentata*; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, *Wercklé 1910* (FI, PC, YU, **Gradstein 1994**).

PANAMA. S. loc. (Verdoorn 1932 as *Marchesinia denticulata*; **Fulford and Sharp 1990** as *Marchesinia trollii*; Bastos 2004); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: S. loc. (**Stephani 1912a** as *Marchesinia denticulata*; **Geissler and Bischler 1985** as *Marchesinia denticulata*; Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 685* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34174* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34750* (JE, **Schäfer-Verwimp 2014**). LOS SANTOS: S. loc. (Schäfer-Verwimp 2014); Las Tablas distrito, Cerro Canajagua, Halbinsel Azuero, ~950 m, *Troll Hep. Sel. Crit. 156* (JE-04001746, **TYPE** of *Marchesinia trollii*, **Verdoorn 1932** as *Marchesinia trollii*; **Geissler and Bischler 1985** as *Marchesinia trollii*; **Stotler et al. 1998**); Las Tablas distrito, Península de Azuero, Cerro Canajagua, *Troll 10527* (CANM, **Ireland and Ley 1984** as *Marchesinia trollii*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Standley 40789* (F, YU, **Gradstein 1994**; **Stotler et al. 1998**; **Dauphin et al. 2022**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Summit Garden, *Salazar Allen & Gradstein 9496* (PMA, **Gradstein 1994**; **Stotler et al. 1998**).

Also reported from West Tropical Africa, East Tropical Africa, Middle Atlantic Ocean, Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Marchesinia brachiata var. ***robusta*** (Mitt.) Gradst. et Uribe, *Mem. New York Bot. Gard.* 121: 573, 2021 (Gradstein 2021).

≡*Lejeunea robusta* Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 359, 1851 (Mitten 1851). Type: Ecuador.

≡*Marchesinia robusta* (Mitt.) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

≡*Homalolejeunea robusta* (Mitt.) Spruce ex Bonner, *Index Hepat.* 6: 637, 1966 (Bonner 1966), nom. inval. (ICN2018 Art. 41.3; basionym not cited).

=*Marchesinia quadridens* Steph., *Spec. Hepat.* 5: 152, 1912 (Stephani 1912a), nom. illeg. (ICN2018 2018 Art. 52,1; earlier name included). Type: Ecuador.

***NICARAGUA.** *MATAGALPA: Matagalpa municipio, along Hwy 3 ~1 km NW of La Fundadora entrance, 13°01′N, 85°56′W, 1,450–1,520 m, 24 May 1981, *Stevens & Heinrich 20365*, det. Dauphin May 2017 (MO-5228165! https://tropicos.org/specimen/90103081, **this publication**).

COSTA RICA. S. loc. (**Stephani 1912a** as *Marchesinia quadridens*; Bonner 1966 as *Homalolejeunea robusta*; Gradstein et al. 2001b as *Marchesinia robusta*; Schäfer-Verwimp 2014 as *Marchesinia robusta*; Gradstein 2021); Cordillera de Talamanca (Holz 2003 as *Marchesinia robusta*; **Holz and Gradstein 2005b** as *Marchesinia robusta*); Cordillera de Talamanca, *Kappelle 3543* (U, **Kappelle 1996** as *Marchesinia robusta*). CARTAGO: El Guarco cantón, La Cangreja, *Mata 34* (USJ, **Dauphin 2005** as *Marchesinia robusta*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Marchesinia robusta*); S. loc., 1,550 m, *Gradstein 9598* (GOET, **Heinrichs et al. 2009** as *Marchesinia robusta*); Coto Brus cantón, Parque Internacional La Amistad, Pittier, 1,700 m, *Dauphin 1416* (GOET, CR, **Heinrichs et al. 2009** as *Marchesinia robusta*); Coto Brus, *Sipman 11936* (U, **Gradstein 1994** as *Marchesinia robusta*; **Gradstein et al. 1994** as *Marchesinia robusta*; **Dauphin 2005** as *Marchesinia robusta*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Marchesinia robusta*); Monteverde, 1,550 m, *Gradstein & Solano 9525*, *9555* (U, **Gradstein et al. 1994** as *Marchesinia robusta*; **Dauphin 2005** as *Marchesinia robusta*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Marchesinia robusta*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Marchesinia robusta*); Dota cantón, San Gerardo (Dauphin 2005 as *Marchesinia robusta*); Dota cantón, San Gerardo, Los Robles, 2,300 m, 30 Jan 2000, *Holz CR 00-373* (GOET, **Holz et al. 2001** as *Marchesinia robusta*; **Dauphin 2005** as *Marchesinia robusta*; **Heinrichs et al. 2009** as *Marchesinia robusta*); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 17 Mar 1999, *Holz CR 99-255* (CR, GOET, **Holz et al. 2001** as *Marchesinia robusta*; **Dauphin 2005** as *Marchesinia robusta*); Moravia cantón, La Palma, *Standley 28050* (B, **Gradstein 1994** as *Marchesinia robusta*); Pérez Zeledón cantón, Río Savegre, 28 Sep 1999, *Heinrichs et al. 4347*, det. Dauphin and Brinda Jun 2017 (MO-5282910! https://tropicos.org/specimen/90143705, **this publication**); Pérez Zeledón cantón, Rivas, San Gerardo, 1,400–1,500 m, 27 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1284*, *Schäfer-Verwimp & Holz SV/H-0221* (CR, GOET, hb. Schäfer-Verwimp, **Holz et al. 2001** as *Marchesinia robusta*; **Dauphin 2005** as *Marchesinia robusta*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021** as *Marchesinia robusta*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande,

8°39′N, 82°12′W, 1,670 m, *Schäfer-Verwimp & Verwimp 34437* (JE, **Schäfer-Verwimp 2014** as *Marchesinia robusta*); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34557* (JE, **Schäfer-Verwimp 2014** as *Marchesinia robusta*). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34173* (JE, **Schäfer-Verwimp 2014** as *Marchesinia robusta*).

Also reported from Northern South America, Western South America.

Marsupella Dumort., *Commentat. Bot. (Dumortier)*: 114, 1822 (Dumortier 1822).

Marsupella emarginata (Ehrh.) Dumort., *Recueil Observ. Jungerm.*: 24, 1835 (Dumortier 1835).

≡*Jungermannia emarginata* Ehrh., *Hannover. Mag.* 22(8): 141, 1784 (Ehrhart 1784). Type: Germany.

COSTA RICA. SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, *Dauphin 3387* (CR, **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Schäfer-Verwimp & Holz SV/H-0144 p.p.*, det. Vána (CR, **Dauphin 2005**).

PANAMA. NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1550* (PMA, **Dauphin 2007**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean(?), Siberia, Russian Far East, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Malesia, New Zealand, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico, Western South America, Southern South America.

Mesoptychia (Lindb.) A.Evans, *Ottawa Naturalist* 17(1): 15, 1903 (Evans 1903b).

Mesoptychia turbinata (Raddi) L.Söderstr. et Váňa, *Phytotaxa* 65: 55, 2012 (Váňa et al. 2012b).

≡*Jungermannia turbinata* Raddi, *Jungermanniogr. Etrusca*: 18, 1818 (Raddi 1818b). Type: Italy.

≡*Lophozia turbinata* (Raddi) Steph., *Bull. Herb. Boissier*, ser. 2, 1(2): 128, 1901 (Stephani 1901c).

≡*Leiocolea turbinata* (Raddi) H.Buch, *Ann. Bryol.* 10: 4, 1937 (Buch et al. 1937).

GUATEMALA. S. loc. (Paton 1999 as *Leiocolea turbinata*; Váňa 1999 as *Lophozia turbinata*; Duncan and Slack 2015). QUICHÉ: Trail to Sacapula above Nebaj, 7 Nov 1945, *Sharp 2470* (TENN, **Gradstein and Váňa 1987** as *Lophozia turbinata*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Caucasus, Western Asia, China, Southeastern USA(?).

Metalejeunea Grolle, *Bryophyt. Biblioth.* 48: 17, 1995 (Grolle 1995).

Metalejeunea cucullata (Reinw., Blume et Nees) Grolle, *Bryophyt. Biblioth.* 48: 100, 1995 (Grolle 1995).

≡*Jungermannia cucullata* Reinw., Blume et Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 227, 1825 (Reinwardt et al. 1824a). Type: Java.

=*Microlejeunea monoica* Bischl., *Nova Hedwigia* 5(1/2): 383, 1963 (Bischler et al. 1963), syn. fide Grolle (1995). Type: Guadeloupe.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 295* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 156*, *157* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Microlejeunea monoica*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). SAN MARCOS: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *TOLEDO: Punta Gorda, Oct 1932, *White 71 p.p.*, det. Dauphin Jun 2017 (MO-6699926! https://tropicos.org/specimen/100986299, **this publication**).

COSTA RICA. SAN JOSÉ: Dota cantón, San Gerardo, trail along Rio Savegre, 1,900 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0110/A* (**Lüth and Schäfer-Verwimp 2004**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30912 p.p.* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Río Genio, 5°32′57″N, 87°03′36″W, 0–10 m, *Dauphin 940*, det. G. Dauphin Apr 2021 (USJ-47238!, CR-4468436!, W-0207454! https://w.jacq.org/W0207454, **this publication**).

Also reported from West-Central Tropical Africa, Southern Africa(?), Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Northeastern USA(?), Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria Raddi, *Jungermanniogr. Etrusca*: 34, 1818 (Raddi 1818b).

Metzgeria acuminata Steph., *Bull. Herb. Boissier* 7(12): 934 (282), 1899 (Stephani 1899b). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,230 m, *Pérez 348* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. ALAJUELA: Poás Volcano, 10°10′N, 84°12′W, 2,100 m, 24 Mar 1973, *Engel 8900* (F, **Costa 2008**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Metzgeria adscendens Steph. ex K.I. Goebel, *Flora* 77: 427, 1893 (Goebel 1893b). Type: Guyana.

GUATEMALA. S. loc. (Santos 2008). QUETZALTENANGO: Las Nubes, San Martín, Chile Verde, 2,250 m, 27 Jan 1941, *Standley 85181* (F, **Costa 2008**).

Also reported from Northern South America, Brazil.

Metzgeria agnewiae Kuwah., *Bryologist* 76(4): 569, 1973 (Kuwahara 1973). Type: Kenya.

GUATEMALA. SAN MARCOS: Road between San Marcos and San Rafael Pie de la Cuesta, 2,500–2,700 m, 6 Feb 1941, *Standley 86494* (F, **Costa 2008**); road between San Marcos and Serchil, 2,700–3,150 m, 20 Jan 1941, *Standley 85389* (F, **Costa 2008**).

HONDURAS. FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, 1,600 m, Mar 1947, *Standley 4897* (F, **Costa 2008**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). SAN JOSÉ: Dota cantón, San Gerardo, 2,850 m, 10 May 2000, *Holz CR VA-9* (RB, **Costa 2008**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, Southern Africa, Mexico, Northern South America, Western South America, Brazil, Southern South America.

Metzgeria albinea Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cci, 1890 (Spruce 1889) var. ***albinea***. Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350 m, 1907, *Türckheim*, hb. Levier 5826 (G, FI, **So 2002**); Cobán, 1,350 m, 1908, *Türckheim 6070* (NY, **Costa 2008**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 173* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., *Pérez 1209* (USCG, Pérez 2009). SUCHITEPÉQUEZ: Zunil municipio, Finca Montecristo, Santa María de Jésus, 1,200–1,300 m, 31 Jan 1940, *Steyermark 35241* (F, **Costa 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15088* (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., Dec 1993, *Allen 15315* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15364* (BRH, MO, **Whittemore and Allen 1996**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110044b* (UC, **Norris et al. 2017**); San Ramón cantón, La Balsa, 10°11′N, 84°30′W, *Stevens 14265*, det. Whittemore (CR, **Dauphin 2005**). CARTAGO: Paraíso cantón, Rio Grande de Orosi, SSE of Tapantí, 9°46′N, 83°47′W, 1,400 m, 13 Mar 1973, *Engel 8321* (F, **Costa 2008**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 1,550 m, *Gradstein & Solano 9508* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, 2,400 m, 27 Feb 1999, *Holz CR 99-060* (RB, **Costa 2008**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Institute of Hydraulic Resources and Electricity's plant nursery, 1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, quadrat 1–4 of J. Cavalier, 1,200 m, 24 Apr 1998, *Valdespino et al. 802* (PMA, **Stotler et al. 1998**; **Costa 2008**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34457*, *34473* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34728* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34144* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,150 m, 28 Sep 2001, *Salazar Allen & Villarreal 19154* (**Costa 2008**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre, 1,200–1,300 m, 6 Jun 1991, *Salazar Allen & Gradstein 9287* (PMA, **Stotler et al. 1998**; **Costa 2008**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**);

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Southern Africa, Western Indian Ocean, Northeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Metzgeria albinea var. ***angusta*** (Steph.) D.P.Costa et Gradst., *Bryologist* 103(4): 757, 2001 (Costa and Gradstein 2000).

≡*Metzgeria angusta* Steph., *Bull. Herb. Boissier* 7(12): 944 (*Sp. Hepat. [Stephani]* 1: 292), 1899 (Stephani 1899b). Lectotype: Brazil.

?**GUATEMALA.** S. loc., *Levier* (BM, **Stephani 1899b** as *Metzgeria angusta*; Hell 1969 as *Metzgeria angusta*; **Engel 1978** as *Metzgeria angusta*; **Geissler and Bischler 1985** as *Metzgeria angusta*; Kuwahara 1986 as *Metzgeria angusta*; Schuster 1992a as *Metzgeria angusta*; Oliveira-e-Silva and Yano 2000 as *Metzgeria angusta*). Note: All reports are probably based on Stephani (1899b), but according to Costa (2008), the material probably belongs to *Metzgeria sandei* (see also Costa and Gradstein 2000).

PANAMA. COCLÉ: La Pintada distrito, El Copé, 8°37′N, 80°35′W, 1,000 m, Aug 1979, *Meijer 250* (PMA, **Dauphin et al. 2006**; **Costa 2008**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria attenuata Steph., *Biblioth. Bot.* 87(2): 177, 1916 (Stephani 1916b). Type: Bolivia.

COSTA RICA. S. loc. (Schäfer-Verwimp and Van Melick 2016). CARTAGO: La Union cantón, Carpintera, 1,500–1,850 m, Feb 1924, *Standley 35661* (JE, **Costa 2008**).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016). BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Bocas del Toro. CHIRIQUÍ: S. loc., 2,462 m, 15 Mar 1996, *Costa et al. 3022a* (RB, **Costa 2008**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,450 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30892* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Río Hornitos, 1,100–1,300 m, 16 Mar 1996, *Costa et al. 3052a* (RB, **Costa 2008**); Tierra Altas distrito, Parque Internacional La Amistad, 2,462 m, 15 Mar 1996, *Costa et al. 3030a* (RB, **Costa 2008**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34195/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from West-Central Tropical Africa, East Tropical Africa, Malesia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria aurantiaca Steph., *Bull. Herb. Boissier* 7(12): 938 (*Sp. Hepat. [Stephani]* 1: 286), 1899 (Stephani 1899b). Type: Brazil.

COSTA RICA. S. loc. (G-10293, **Kuwahara 1986**; Gradstein et al. 1994; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 23 Apr 2007, *Norris 111002* (UC, **Norris et al. 2017**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *Sillett 42583* (**Dauphin 2005**); Monteverde, 1,500 m, *Sillett 8-2* (U, **Gradstein et al. 1994**). SAN JOSÉ: Dota cantón, San Gerardo, 3,000 m, 5 Apr 1999, *Holz CR 99-225* (RB, **Costa 2008**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria ciliata Raddi, *Critt. Brasil.*: 17, 1822 (Raddi 1822). Type: Brazil.

=*Metzgeria furcata β decipiens* C.Massal., *Nuovo Giorn. Bot. Ital.* 17(3): 256, 1885 (Massalongo 1885), syn. fide Grolle (2002). Type: Tierra del Fuego.

≡*Metzgeria decipiens* (C.Massal.) Schiffn., *Forschungsr. Gazelle* 4: 43, 1889 (Schiffner 1890).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 288* (USCG, Pérez 2009 as *Metzgeria* '*decipines*'); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Metzgeria* '*decipines*'). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Metzgeria decipiens*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 82*, *309*, *490*, *500* (USCG, **Freire et al. 2013** as *Metzgeria decipiens*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Metzgeria decipiens*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Metzgeria* '*decipines*'). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Metzgeria* '*decipines*'). QUETZALTENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008** as *Metzgeria decipiens*); Zunil municipio, Aguas Amargas, 2,450 m, 14 Jan 1941, *Standley 83345* (F, **Costa 2008**). SUCHITEPÉQUEZ: Zunil municipio, Finca Montecristo, Santa María de Jésus, 1,200–1,300 m, 31 Jan 1940, *Steyermark 35235* (F, **Costa 2008**).

COSTA RICA. S. loc. (Kuwahara 1984 as *Metzgeria decipiens*); S. loc., *Pittier 6099* (BR-1969-285-225, **Kuwahara 1983**, **1986**, both as *Metzgeria decipiens*); S. loc., *Pittier* (Gradstein et al. 1994 as *Metzgeria decipiens*; **Dauphin 2005** as *Metzgeria decipiens*); Cordillera de Talamanca, *Kappelle 3518* (U, **Kappelle 1996** as *Metzgeria decipiens*). ALAJUELA: Poás Volcano, 10°10′N, 84°12′W, 2,100 m, 24 Mar 1973, *Engel 8982* (F, **Costa 2008**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110145j* (UC, **Norris et al. 2017** as *Metzgeria decipiens*). CARTAGO: Inter-American Highway between Empalme and Cerro La Asunción, 9°36′N, 83°46′W, 3,120 m, 26 Mar 1973, *Engel 9144* (F, **Costa 2008**). HEREDIA: San Isidro cantón, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, 11 Mar 1926, *Standley 52236* (JE, **Costa 2008**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 460–480 m, Jun 1992, *Lücking* (RB, **Costa 2008**). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Metzgeria decipiens*); Monteverde, <1,500 m (Dauphin 2005 as *Metzgeria decipiens*); Monteverde cantón, Monteverde Cloud Forest

Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Metzgeria decipiens*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Metzgeria decipiens*); Monteverde, 1,550 m, *Gradstein & Solano 9509*, *9420* (U, USJ, **Gradstein et al. 1994** as *Metzgeria decipiens*; **Dauphin 2005** as *Metzgeria decipiens*); Monteverde, 1,550 m, 9 Nov 1993, *Gradstein 9420* (U, **Costa 2008**). SAN JOSÉ: Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998** as *Metzgeria decipiens*).

PANAMA. †BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This certainly refers to the report from the "new" comarca Naso Tjër Di. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,950 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 31008* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34465/B*, *34468* (JE, **Schäfer-Verwimp 2014**); Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3026a* (RB, **Costa 2008**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34189*, *34246* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Chepigana distrito, top of Cerro Sapo, 1,090 m, 1 Feb 1978, *Hammel 1252* (PMA, **Stotler et al. 1998** as *Metzgeria decipiens*; **Costa 2008**); frontera Darién-Colombia, 1,270–1,520 m, 19 Apr 1980, *Dillon et al. 1897* (PMA, **Costa 2008**). NASO TJËR DI COMARCA: Cerro Fábrega, *Guerrero 150* (PMA, **Dauphin 2007** as *Metzgeria decipiens*). NGÄBE-BUGLÉ COMARCA: Kankintú distrito, Cerro Colorado, 1,600–1,700 m, *Folsom et al. 4747* (PMA, **Costa 2008**). PANAMA WEST: San Carlos distrito, Cerro Pelado, 8°38′53″N, 80°04′42″W, 1,080 m, 28 Jul 2001, *Salazar Allen & Villarreal 18699* (PMA, **Costa 2008**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, road behind INTEL tower, 900 m, *Salazar Allen & Gradstein 9374* (PMA, **Stotler et al. 1998** as *Metzgeria decipiens*).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Caucasus, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands, Antarctic Continent.

Metzgeria claviflora Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 556, 1885 (Spruce 1885). Type: Ecuador.

=*Metzgeria gigantea* Steph., *Biblioth. Bot.* 87: 177, 1916 (Stephani 1916b), syn. fide Costa (2008). Type: Bolivia.

HONDURAS. S. loc. (Lüth and Schäfer-Verwimp 2004). Note: We are not aware of any firsthand report from Honduras.

NICARAGUA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021). ATLÁNTICO SUR: Bluefields municipio, SE Cerro San Isidro, 65 m, 9 Mar 1966, *Proctor et al. 27059* (F, **Kuwahara 1986**; **Costa 2008**).

COSTA RICA. S. loc. (Gradstein 1999a as *Metzgeria gigantea*; Dauphin 2005 as *Metzgeria gigantea*; Gradstein and Holz 2005 as *Metzgeria gigantea*; Cordillera de Talamanca (Holz 2003 as *Metzgeria gigantea*; **Holz and Gradstein 2005b** as *Metzgeria gigantea*). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110546* (UC, **Norris et al. 2017**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000–3,300 m, 19 Sep 1994, *Gradstein & Dauphin 9669* (U, **Costa 2008**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, 4 Jan 2000, *Kluge 142* (RB, **Costa 2008**).

Also reported from the Caribbean, Northern South America, Western South America.

Metzgeria conjugata Lindb., *Acta Soc. Sci. Fenn.* 10: 495, 1875 (Lindberg 1875). Type: Ireland.

COSTA RICA. PUNTARENAS: Monteverde (Morales 1991); Monteverde, Oct 1963, *James, W. 7* (R, **Reed and Robinson 1971**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-15* (R, **Reed and Robinson 1971**). SAN JOSÉ: Moravia cantón, Alto de La Palma, *Morales 365* (FLAS, **Morales 1991**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero Cuerpo de Paz, junto al Río El Guabal, 8°40′06″N, 80°35′27″W, 722 m, 31 Jul 2012, *Sierra 6* (PMA, **Dauphin et al. 2015**); La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696–710 m, 1 Aug 2012, *Dauphin & Salazar Allen 4535*, *Dauphin & Gudiño 4447*, *4459*, *4482* (PMA, **Dauphin et al. 2015**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa(?), Macaronesia, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia(?), Australia(?), Southwestern Pacific(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA(?), Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria consanguinea Schiffn., *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 60(2): 271, 1893 (Schiffner 1893a). Type: Java.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. CARTAGO: Inter-American Highway between Empalme and Cerro La Asunción, 9°40′N, 84°51′W, 2,680 m, 26 Mar 1973, *Engel 9186* (F, **Costa 2008**); Pan-American Highway, 2,690 m, 22 Jun 1983, *Chaverri & López 1520* (U, **Costa 2008**); Paraíso cantón, Cerro Asunción 9°36′N, 84°46′W, 3,130 m, 15 Mar 1973, *Engel 8446* (F, **Costa 2008**); Paraíso cantón, Orosi, N of dam site on Rio Grande de Orosi, SSE of Tapantí 9°42′N, 83°47′W, 1,590 m, 25 Mar 1973, *Engel 9092* (F, **Costa 2008**); road from Cartago to Cerro de la Muerte, 2,600 m, 26 Feb 1999, *Gradstein & Holz CR 99-0074* (RB, **Costa 2008**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria crassipilis (Lindb.) A.Evans, *Rhodora* 11(130): 188, 1909 (Evans 1909).

≡*Metzgeria furcata* * *crassipilis* Lindb., *Acta Soc. Fauna Fl. Fenn.* 1(2): 42, 1877 (Lindberg 1877). Type: USA.

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34272* (JE, **Schäfer-Verwimp 2014**).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Malesia, Papuasia, Australia, New Zealand, Eastern Canada, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Western South America.

Metzgeria cylindra Kuwah., *Bryologist* 81(3): 405, 1978 (Kuwahara 1978a). Type: Peru.

COSTA RICA. S. loc. (Benítez and Gradstein 2011; Schäfer-Verwimp et al. 2013; Gradstein and Uribe 2016). CARTAGO: Paraíso cantón, Cerro Asunción, 9°34′N, 83°45′W, 3,300 m, 15 Mar 1973, *Engel 8496* (F, **Costa 2008**).

Also reported from Western South America.

Metzgeria dichotoma (Sw.) Nees, *Syn. Hepat.* 4: 504, 1846 (Gottsche et al. 1846).

≡*Jungermannia dichotoma* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, 2,500 m, *Dauphin 3408*, *3409* (CR, **Dauphin 2005**); Dota cantón, San Gerardo, 2,850 m, May 2000, *Holz CR VA-7*, *CR VA-8* (RB, **Costa 2008**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Metzgeria dorsipara (Herzog) Kuwah., *J. Hattori Bot. Lab.* 40: 269, 1976 (Kuwahara 1976).

≡*Metzgeria violacea* var. *dorsipara* Herzog, *Svensk Bot. Tidskr.* 51(1): 187, 1957 (Herzog 1957b). Type: Ecuador.

COSTA RICA. S. loc. (Gradstein 2021). CARTAGO: Paraíso cantón, Cerro Asunción, 9°36′N, 84°46′W, 3,130 m, 15 Mar 1973, *Engel 8466* (F, **Costa 2008**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,400 m, 26 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1191* (RB, **Costa 2008**).

PANAMA. COCLÉ: La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,250 m, 27 Sep 2001, *Salazar Allen & Villarreal 18983* (PMA, Dauphin et al. 2006 as *Metzgeria* aff. *dorsipara*; **Costa 2008**).

Also reported from Western South America.

Metzgeria fruticola Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 554, 1885 (Spruce 1885). Type: Ecuador.

GUATEMALA. QUETZALTENANGO: Mujaliá, between San Martín and Colomba, 1,800 m, 2 Jan 1941, *Standley 85696* (F, **Costa 2008**); San Martín Sacatepéquez municipio, Pocito, San Martín, Chile Verde, 2,200 m, 27 Jan 1941, *Standley 84915* (F, **Costa 2008**).

COSTA RICA. CARTAGO: Inter-American Highway between Empalme and Cerro La Asunción, 9°46′N, 84°47′W, 1,400 m, 13 Mar 1973, *Engel 8304* (F, **Costa 2008**); Paraíso cantón, Rio Grande de Orosi, N side of dam site, SSE of Tapantí, 9°42′N, 83°47′W, 1,400 m, 13 Mar 1973, *Engel 8311* (F, **Costa 2008**); Paraíso cantón, Río Grande de Orosi, SSE of Tapantí, 2,680 m, 26 Mar 1973, *Engel 9202* (F, **Costa 2008**). SAN JOSÉ: Dota cantón, San Gerardo, 1,950 m, 24 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1080* (RB, **Costa 2008**); Moravia cantón, La Palma, Río de La Hondura, 10°03′N, 83°59′W, 1,575 m, 23 Mar 1973, *Engel 8880* (F, **Costa 2008**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20–22 Mar 1924, *Standley 38493* (JE, **Costa 2008**).

PANAMA. S. loc. (Schäfer-Verwimp 2014). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,880 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30986* (JE, **Schäfer-Verwimp 2014**); Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3032a* (RB, **Costa 2008**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria furcata (L.) Corda, *Gen. hepat.*: 654, 1829 (Corda 1829).

≡*Jungermannia furcata* L., *Sp. Pl.* 1: 1136, 1753 (Linnaeus 1753). Type: Europe.

=*Metzgeria innovans* Steph., *Spec. Hepat.* 6: 52, 1917 (Stephani 1917b), syn. fide So (2002). Type: New Caledonia.

GUATEMALA. ?ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Metzgeria* cf. *furcata*); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Metzgeria* cf. *furcata*). Note: We are not aware of any positively identified specimen from Alta Verapaz.

QUETZALTENANGO: Quetzaltenango municipio, Volcán Santa María, 2–4 mi S of Santa María de Jésus, 1,400–1,500 m, 17 Jan 1940, *Steyermark 34314* (F, **Costa 2008**).

COSTA RICA. S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (YU, G, S, **Hampe 1851b**; **Müller 1851**). ALAJUELA: S. loc., *Polakowsky 120d* (**Polakowsky 1877**); S. loc., *Polakowsky* (**Polakowsky 1879**).

PANAMA. S. loc. (**Mitten 1854b**; Stotler et al. 1998). CHIRIQUÍ: Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3028a* (RB, **Costa 2008**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**). COCLÉ: La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,250 m, 21 Sep 2001, *Salazar Allen & Villarreal 19152* (PMA, **Dauphin et al. 2006** as *Metzgeria innovans*; **Costa 2008**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Western Canada(?), Northwestern USA(?), North-Central USA(?), Southwestern USA(?), South-Central USA(?), Mexico(?), the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands(?), Antarctic Continent. Note: The distribution of this taxon is heavily confounded by past synonymizations of taxa partly proven to be independent species now.

Metzgeria herminieri Schiffn., Österr. *Bot. Z.* 61(7/8): 261, 1911 (Schiffner 1911). Type: Guadeloupe.

GUATEMALA. CHIQUIMULA: Concepción de las Minas municipio, Cerro Brujo, 1,700–2,000 m, 2 Nov 1939, *Steyermark 31031* (F, **Costa 2008**). HUEHUETENANGO: Sierra de los Cuchumatanes, La Pradera, 3,300 m, 31 Dec 1940, *Standley 81814* (F, **Costa 2008**).

COSTA RICA. S. loc. (Dauphin 2005). CARTAGO: Inter-American Highway between Empalme and Cerro La Asunción, 9°46′N, 84°47′W, 2,680 m, 26 Mar 1973, *Engel 9201* (F, **Costa 2008**). HEREDIA: San Isidro cantón, Cerro Caricias, 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 52280* (JE, **Costa 2008**). LIMÓN: Pococí cantón, Guápiles, 300–500 m, 12–13 Mar 1924, *Standley 37203* (MICH, **Kuwahara 1980, 1986**); Pococí cantón, Río Toro Amarillo, Guápiles, 300 m, 9 Aug 1963, *Ponce de León 1033a* (F, **Costa 2008**). SAN JOSÉ: Dota cantón, San Gerardo, 2,850 m, 22 May 1999, *Holz CR VA-19*, *CR VA-20* (RB, **Costa 2008**); Moravia cantón, La Palma, Río de La Hondura, 10°03′N, 83°59′W, 1,575 m, 23 Mar 1973, *Engel 8859* (F, **Costa 2008**). **PANAMA.** VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34309* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Metzgeria inflata Steph., *Bull. Herb. Boissier* 7(12): 936 (*Sp. Hepat. [Stephani]* 1: 284), 1899 (Stephani 1899b). Type: Venezuela.

PANAMA. S. loc. (Gradstein and Uribe 2016; Gradstein 2021). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34258* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,300 m, 25–26 Sep 2001, *Salazar Allen & Villarreal 18868*, *18923* (PMA, **Dauphin et al. 2006**; **Costa 2008**). PANAMA WEST: San Carlos distrito, Cerro Pelado, 8°38′53″N, 80°04′42″W, 1,060 m, 26 Feb 2001, *Salazar Allen & Villarreal 18319, 18320*, *18321*, *18810* (PMA, **Dauphin et al. 2006**; **Costa 2008**). ?PANAMA: S. loc. (Schäfer-Verwimp 2014) Note: We are not aware of any firsthand report from Panama Province and think it refers to Panama West.

Also reported from Malesia, the Caribbean, Northern South America, Western South America.

Metzgeria lechleri Steph., *Bull. Herb. Boissier* 7(12): 942 (*Sp. Hepat. [Stephani]* 1: 290), 1899 (Stephani 1899b). Type: Chile.

PANAMA. CHIRIQUÍ: Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3029a* (RB, **Costa 2008**).

Also reported from Indian Subcontinent, Mexico, the Caribbean, Western South America, Brazil, Southern South America.

Metzgeria leptoneura Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 555, 1885 (Spruce 1885) var. ***leptoneura***. Type: Peru.

=*Metzgeria hamata* auct. (sensu Lindb.), non Lindb., *Acta Soc. Fauna Fl. Fenn.* 12(2): 25, 1877 (Lindberg 1877), nom. illeg. (ICN2018 Art. 52.1; earlier name included [*Metzgeria procera*]), syn. fide Engel (1978).

=*Metzgeria australis* Steph., *Hedwigia* 28(2): 267, 1889 (Stephani 1889), syn. fide Evans (1923a). Type: Australia.

=*Metzgeria thomeensis* Steph., *Hedwigia* 30(6): 271, 1891 (Stephani 1891b), syn. fide Kuwahara (1984). Type: São Tomé.

=*Metzgeria sandei* Schiffn., *Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl.* 67: 181, 1898 (Schiffner 1898b), syn. fide So (2003). Type: Java.

=*Metzgeria papulosa* Steph., *Bull. Herb. Boissier* 7(12): 946 (*Sp. Hepat. [Stephani]* 1: 294, 1899 (Stephani 1899b), syn. fide Piippo (1991). Lectotype: Hawaii.

=*Metzgeria tuerckheimii* Steph., *Sp. Hepat.* 6: 61, 1917 (Stephani 1917b), syn. with *Metzgeria sandei* in Kuwahara (1969). Lectotype (Kuwahara 1969: 364 as "holotype") or possibly holotype: Guatemala, Alta Verapaz, prope Cobán, 1,350 m, Oct 1907, *Türckheim 5504* (G-00112626 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=142886&base=img&lang=en).

GUATEMALA. S. loc. (**Stephani 1917b** as *Metzgeria 'türckheimii'*; Reimers 1926 as *Metzgeria hamata*; Winkler 1967 as *Metzgeria hamata*; Kuwahara 1969, 1976, 1982 as *Metzgeria sandei*, 1984 as *Metzgeria australis*, 1986 as *Metzgeria sandei*, *Metzgeria thomeensis*, and *Metzgeria tuerckheimii*; Schuster 1992a as *Metzgeria sandei*; Costa and Gradstein 2000 as *Metzgeria sandei*); S. loc., *Cook & Griggs 74* (MICH, **Kuwahara 1986**; **Pérez 2009**); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Geissler and Bischler 1985** as *Metzgeria turckheimii*). ALTA VERAPAZ: Cobán, 1,350 m, *Türckheim 5504* (G-13404, **Kuwahara 1986** as *Metzgeria sandei*; **Pérez 2009** as *Metzgeria sandei*); Cobán, 1,350 m, Aug 1907, *Türckheim 13404* (G, **Costa 2008**); Cobán, 1,350 m, Oct 1907, *Türckheim 5507* (G-00112626 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=142886&base=img&lang=en, **TYPE** of *Metzgeria tuerckheimii*); Cobán, 1,600 m, 1908, *Türckheim 5070* (NY, **Kuwahara 1976** as *Metzgeria thomeensis*, **1986** as *Metzgeria australis*; **Pérez 2009** as *Metzgeria australis*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 24*, *57*, *233*, *235*, *243* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1407* (USCG, Pérez 2009). QUETZALTENANGO: Santo Tomás, 2,500–3,700 m, 21 Jan 1940, *Steyermark 34702* (F, **Costa 2008**); Zunil municipio, Volcán Zunil, 2,500–3,000 m, 24 Jan 1940, *Steyermark 34915* (F, **Costa 2008**). QUICHÉ: S. loc., *Pérez 2359* (USCG, Pérez 2009). SAN MARCOS: Tajamulco municipio, slopes of Tajumulco, between Las Canojas and top ridge, 3,300–3,900 m, 16 Nov 1940, *Steyermark 35826* (F, **Costa 2008**).

EL SALVADOR. S. loc. (Kuwahara 1986 as *Metzgeria hamata*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/1/c/2* (**Winkler 1967** as *Metzgeria hamata*).

COSTA RICA. S. loc. (Reimers 1926 as *Metzgeria hamata*; Winkler 1967 as *Metzgeria hamata*; Kuwahara 1978b as *Metzgeria thomeensis*, 1984 as *Metzgeria australis*, 1986 as *Metzgeria thomeensis*; Cole 1984 as *Metzgeria hamata*; Gradstein et al. 1994 as *Metzgeria australis* and *Metzgeria papulosa*; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009 as *Metzgeria australis*); S. loc., *Pittier 6099* (BR-1969-285-171, **Kuwahara 1986**); S. loc., *Pittier* (**Stephani 1899b** as *Metzgeria hamata*); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 3967b* (U, **Kappelle 1996**). ALAJUELA: S. loc., *Polakowsky 120d* (**Dauphin 2005**; **Morales 1991**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110031* (UC, **Norris et al. 2017**); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017** as *Metzgeria australis*); San Ramón cantón, Río San Pedro, 23 Jul 1932, *Brenes 30* (NY, **Kuwahara 1986** as *Metzgeria papulosa*; **Dauphin 2005** as *Metzgeria papulosa*); San Ramón, 3,200–3,350 ft (975–1,021 m), 28 Jul 1967, *Bowers 390-C* (F, **Costa 2008**). CARTAGO: El Guarco cantón, La Esperanza, 1.5 km N Pan-American Highway (km 61.5), 2,640 m, 4 Dec 1985, *Kappelle 230* (U, **Costa 2008**); La Union cantón, Cerro de La Carpintera, 1,500–1,850 m, Feb 1924, *Standley 34428*, *34448* (JE, **Costa 2008**); Paraíso cantón, Cerro Asunción, 9°36′N, 84°46′W, 3,130 m, 15 Mar 1973, *Engel 8426* (**Costa 2008**); Paraíso cantón, Orosi, Tapantí National Park, Sendero Arboles Caídos, *Anton 295* (CR, **Dauphin 2005**); Paraíso cantón, Rio Grande de Orosi, Tapantí, 9°43′N, 83°47′W, 1,500 m, 25 Mar 1973, *Engel 9131* (F, **Costa 2008**); Turrialba cantón, Santa Cruz (**Kuwahara 1986** as *Metzgeria australis*; Dauphin 2005 as *Metzgeria australis*); Turrialba cantón, Villa Mills, CATIE Station Siberia, Sendero Ecologico, 2,700 m, 28 Feb 1999, *Holz CR 00-495*, *CR 00-505* (RB, **Costa 2008**). GUANACASTE: S. loc. (**Morales 1991** as *Metzgeria thomeensis*); Santa Cruz (**Kuwahara 1976** as *Metzgeria thomeensis*; Dauphin 2005 as *Metzgeria thomeensis*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 2,650–2,900 m, 16 Sep 1994, *Gradstein & Dauphin 9658* (U, **Costa 2008**); San Isidro cantón, Cerro Caricias, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51592* (JE, **Costa 2008**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50500* (Nieva and Schiavone 2002 as *Metzgeria sandei*); Sarapiquí cantón, Salto La Paz, *Woodruff* (FLAS, **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Bosque cercano al Río Toro Amarillo, 5.5 km SO de Guápiles, *Jiménez 1033*, det. Ponce de León (CR, **Morales 1991**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005; Morales 1991); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Reed and Robinson 1971** as *Metzgeria hamata*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, 9–11 Nov 1993, *Gradstein & Dauphin 9432*, *9508*, *9520*, *9522*, *9588* (U, **Costa 2008**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James, W.* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-19b* (T, **Reed and Robinson 1971** as *Metzgeria hamata*; **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, Cerro Daser (Azulillo), 9°51′N, 84°07′W, 2,050–2,150 m, 19 Mar 1973, *Engel 8769* (F, **Costa 2008**); Braulio Carrillo National Park, Sep 1999, *Costa* (RB, **Costa 2008**); Cartago to Cerro de la Muerte, 2,600 m, 23 May 1999, *Holz CR 99-441* (RB, **Costa 2008**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Copey, *Schäfer-Verwimp 80* (CR, **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, 2,900 m, 14 Mar 2000,

Holz CR 00-651, *CR 00-656* (RB, **Costa 2008**); Général (**Tonduz 1896** as *Metzgeria hamata*); Moravia cantón, La Palma, *Morales 364* (FLAS, **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, 3 Feb 1926, *Standley 33012*, *33130*, *33140* (JE, **Costa 2008**); Pérez Zeledón cantón, El General forest, *Pittier 6059* (**Stephani 1893c** as *Metzgeria hamata*; **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Dauphin 2270* (CR, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Quebrada Bonita, 1,000 m, 10 Nov 1987, *Spörle 1.31* (PMA, U, **Spörle 1990**; **Stotler et al. 1998**; **Costa 2008**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,660 m, *Schäfer-Verwimp & Verwimp 34426* (JE, **Schäfer-Verwimp 2014**); Tierra Altas distrito, Parque Internacional La Amistad, 16 Mar 1996, *Costa et al. 3033a* (RB, **Costa 2008**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34536* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34241* (JE, **Schäfer-Verwimp 2014**); Cerro El Tigrero, 8°37′33″N, 80°41′18″W, 1,300 m, 26 Sep 2001, *Salazar Allen & Villarreal 18919*, *18920* (PMA, **Costa 2008**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Chepigana distrito, Cerro Sapo, 2,500 m, 1 Feb 1978, *Hammel 1250* (U, **Costa 2008**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana National Park, 850 m, 17 Feb 1989, *Salazar Allen 6559* (PMA, **Costa 2008**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Chepo distrito, Rancho Chorro, Cañazas Mountains, 400–700 m, 3 Dec 1977, *Folsom et al. 6703* (U, **Costa 2008**).

Also reported from Northern Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Northwestern Pacific, Subarctic America, Western Canada, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Metzgeria liebmaniana Lindenb. et Gottsche, *Syn. Hepat.* 4: 505, 1846 (Gottsche et al. 1846). Type: México.

GUATEMALA. TOTONICAPÁN: Road between San Francisco El Alto and Momostenango, 2,220–3,000 m, 19 Jan 1941, *Standley 84096* (F, **Costa 2008** as *Metzgeria* '*liebmanniana*').

HONDURAS. INTIBUCÁ: La Esperanza, 1,500–1,600 m, 12–31 Jan 1950, *Standley 25282* (F, **Costa 2008** as *Metzgeria* '*liebmanniana*').

COSTA RICA. S. loc. (Kuwahara 1986 as *Metzgeria* '*liebmanniana*'; Dauphin 2005; Gradstein and Holz 2005 as *Metzgeria* '*liebmanniana*'); S. loc., *Pittier* (**Stephani 1899b** as *Metzgeria* '*liebmanniana*'); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Metzgeria* '*liebmanniana*'; Holz 2006). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin et al. 105*, *114*, *117* (FLAS, **Morales 1991** as *Metzgeria* '*liebmanniana*'; **Dauphin 2005** as *Metzgeria* '*liebmanniana*'); Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 6 Mar 2002, *Holz CR 00-608* (RB, **Costa 2008** as *Metzgeria* '*liebmanniana*'). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Metzgeria* '*liebmanniana*'); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Metzgeria* '*liebmanniana*'). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Metzgeria* '*liebmanniana*'); Dota cantón, San Gerardo, 3,000 m, 7 Apr 1999, *Holz CR 99-296* (RB, **Costa 2008** as *Metzgeria* '*liebmanniana*'); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Metzgeria* '*liebmanniana*'); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,300 m, 26 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1086* (RB, **Costa 2008** as *Metzgeria* '*liebmanniana*').

PANAMA. S. loc. (Schäfer-Verwimp 2014 as *Metzgeria* '*liebmanniana*'). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 1,950–2,260 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30865*, *30879* (JE, **Schäfer-Verwimp 2014** as *Metzgeria* '*liebmanniana*'); Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3025a* (RB, **Costa 2008** as *Metzgeria* '*liebmanniana*').

Also reported from Mexico, Northern South America, Western South America, Brazil, Southern South America.

Metzgeria mexicana Steph., *Sp. Hepat. (Stephani)* 6: 55, 1917 (Stephani 1917b). Type: Mexico.

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, 8°48′54.0″N, 82°34′33.9″W, 2,038 m, 11 Aug 2017, *Guerra 111a* (UCH, **Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Metzgeria myriopoda Lindb., *Acta Soc. Fauna Fl. Fenn.* 1(2): 22, 1877 (Lindberg 1877). Type: USA.

EL SALVADOR. SANTA ANA: Metapán municipio, Cerro Miramundo, hacienda Los Planos, 1,890–2,400 m, 25 Feb 1946, *Carlson 963a* (F, **Costa 2008**).

COSTA RICA. CARTAGO: Río Empalme and Río Estrella, 1,450 m, 21 Apr 1983, *Liesner & Judziewicz 14649* (NY, **Costa 2008**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009,

Schäfer-Verwimp & Verwimp 34730 (JE, **Schäfer-Verwimp 2014**).

Also reported from East Tropical Africa, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Western South America, Brazil, Southern South America.

Metzgeria neotropica Kuwah., *Nova Hedwigia* 34: 779, 1981 (Kuwahara 1981). Type: Peru.

COSTA RICA. S. loc. (Gradstein and Uribe 2016). CARTAGO: Oreamuno cantón, road from Cartago to Volcán Irazú, *Lücking* (RB, **Costa 2008**).

Also reported from Western South America.

Metzgeria parviinvolucrata Kuwah., *Nova Hedwigia* 34: 774, 1981 (Kuwahara 1981). Type: Peru.

COSTA RICA. CARTAGO: Inter-American Highway between Empalme and Cerro La Asunción, 3,120 m, 26 Mar 1973, *Engel 9151* (F, **Costa 2008**).

Also reported from Mexico, Western South America.

Metzgeria polytricha Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 553, 1885 (Spruce 1885). Type: Peru.

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021). CARTAGO: Oreamuno cantón, Volcán Irazú, Sep 1941, *Svihla 41-471*, *41-472*, *41-473*, *41-477* (NY, **Costa 2008**); Paraíso cantón, Rio Grande de Orosi, 9°42′N, 83°47′W, 1,590 m, 25 Mar 1973, *Engel 9072a* (F, **Costa 2008**). HEREDIA: San Isidro cantón, Cerro Caricias, 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 52242*, *52293* (JE, **Costa 2008**). LIMÓN: Talamanca cantón, Cahuita, 0 m, 16 Feb 1991, *Maas 7933* (U, **Costa 2008**).

PANAMA. S. loc. (Schäfer-Verwimp et al. 2013). CHIRIQUÍ: Tierra Altas distrito, Parque Internacional La Amistad, 15 Mar 1996, *Costa et al. 3024a* (RB, **Costa 2008**).

Also reported from Northern South America, Western South America, Brazil.

Metzgeria procera Mitt., *Bot. Antarct. voy.* II (*Fl. Nov.-Zel.* 2): 166, 1855 (Mitten 1855). Type: Venezuela.

GUATEMALA. S. loc., 1892, *Levier* (NY, **Costa 2008**). QUETZALTENANGO: Montaña Chicharro, Volcán Santa María, 1,400–1,500 m, 17 Jan 1940, *Steyermark 34317* (F, **Costa 2008**); Zunil municipio, Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′4.0″N, 91°28′35.8″W, 23 Dec 2004, *Quedensley 2078*, det. Dauphin Sep 2017 (MO, W-0089078!, **this publication**); Zunil municipio, Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′4.0″N, 91°28′35.8″W, 2 Jan 2006, *Quedensley 3837*, det. Dauphin Sep 2017 (MO, W-0089079!, **this publication**).

COSTA RICA. S. loc. (Gradstein et al. 1994); S. loc., *Hyde* (**Kuwahara 1986**). LIMÓN: Pococí cantón, Guápiles, near Río Toro Amarillo, 350 m, 9 Feb 1965, *Godfrey 66290* (NY, **Kuwahara 1986**; **Costa 2008**); Pococí cantón, Guápiles, Río Toro Amarillo, 350 m, *Hyde 6055* (**Dauphin 2005**). SAN JOSÉ: Aserrí cantón, Cerro Daser (Azulillo), 9°51′N, 84°07′W, 2,050–2,150 m, 19 Mar 1973, *Engel 8694*, *8747* (F, **Costa 2008**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, 29 Dec 1925, *Standley 43728* (JE, **Costa 2008**); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38014* (JE, **Costa 2008**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1 km N de Quebrada Bonita, 1,500 m, 12 Feb 1998, *Valdespino et al. 924* (NY, **Costa 2008**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34581* (JE, **Schäfer-Verwimp 2014**). COCLÉ: S. loc. (Schäfer-Verwimp 2014); La Pintada distrito, El Copé, 8°37′N, 80°35′W, 15 Jun 1996, *Ayarza & Wong 50* (PMA, **Dauphin et al. 2006**; **Costa 2008**). PANAMA WEST: Capira distrito, Comunidad El Jordanal, 8°40′10″N, 80°07′37″W, 600 m, 21 Jul 2001, *Salazar Allen et al. 18167* (PMA, **Dauphin et al. 2006**; **Costa 2008**); Capira distrito, Parque Nacional Altos de Campana, 8°40′N, 79°55′W, 800–900 m, 7 Apr 1989, *Lara et al. 1459* (PMA, **Dauphin et al. 2006**; **Costa 2008**). ?PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Panama Province and think it refers to Panama West. VERAGUAS: S. loc. (Schäfer-Verwimp 2014); Santa Fe distrito, NW de Santa Fé, 10.8 km de la Escuela Agrícola Alto de Piedra, camino a Calovébora, 8°30′N, 81°05′W, 8 Jun 1975, *Mori 6731* (PMA, **Dauphin et al. 2006**; **Costa 2008**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Metzgeria psilocraspeda Schiffn., Österr. *Akad. Wiss., Math.-Naturwiss. Kl., Denkschr.* 111: 25, 1964 (Schiffner and Arnell 1964). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

Also reported from Brazil, Southern South America.

Metzgeria pulvinata Steph., *Biblioth. Bot.* 87(2): 179, 1916 (Stephani 1916b). Type: Bolivia.

COSTA RICA. CARTAGO: Paraíso cantón, Cerro Asunción, SE of Empalme, Interamerican Highway, 9°41′N, 83°52′W, 2,600 m, 17 Mar 1973, *Engel 8603* (F, **Costa 2008**). SAN JOSÉ: Dota cantón, San Gerardo, 2,000 m, 14 Mar 2000, *Holz CR 00-759* (RB, **Costa 2008**).

Also reported from West-Central Tropical Africa, Mexico, Western South America.

Metzgeria rufula Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 555, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 26 Mar 2010, *Norris 110884* (UC, **Norris et al. 2017**). SAN JOSÉ: "Genesis II" Cloud Forest

Reserve, Cordillera de Talamanca, 2,300 m, Feb 1997, *Lücking* (RB, **Costa 2008**); Général (**Tonduz 1896**); Pérez Zeledón cantón, El General forest, *Pittier 6055* (CR, **Stephani 1893c**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34722* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.67′N, 82°42.85′W, 1,220 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34696/C* (JE, **Schäfer-Verwimp 2014**).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, Eastern Asia, Australia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria scyphigera A.Evans, *Trans. Connecticut Acad. Arts* 18(5): 299, 1914 (Evans 1914b). Type: Peru.

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 248* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUETZALTENANGO: Zunil municipio, Fuentes Georginas, Volcán de Zunil, 2,300–2,500 m, 3 Feb 1941, *Standley 85850* (F, **Costa 2008**). QUICHÉ: S. loc., *Pérez 2356* (USCG, Pérez 2009). SAN MARCOS: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 15 Mar 2010, *Norris 5746* (UC, **Norris et al. 2017**).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,870–2,260 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30985* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34575/B*, *34594/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**).

Also reported from West-Central Tropical Africa, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands(?).

Metzgeria uncigera A.Evans, *Ann. Bot. (Oxford)* 24(2): 276, 1910 (Evans 1910). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 146*, *156*, *382*, *459* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4480* (PMA, **Dauphin et al. 2015**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, Sendero de Interpretación, 8°40′N, 79°55′W, 11 Nov 1995, *Salazar Allen et al. 16026*, det. D. Reyes 1995 (PMA, **Dauphin et al. 2015**)

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria violacea (Ach.) Dumort., *Recueil Observ. Jungerm.*: 26, 1835 (Dumortier 1835).

≡*Jungermannia violacea* Ach., *Beitr. Naturk. (Weber & Mohr)* 1:77, 1805 (Acharius 1805). Type: New Zealand.

=*Metzgeria fruticulosa* auct., non (O.F.Müll.) A.Evans, *Annals of Botany. Oxford* 24: 293, 1910 (Evans 1910), syn. fide Grolle and So (2003).

Note: *Metzgeria violacea* was previously mostly reported under the name *Metzgeria fruticulosa*, but Grolle and So (2003) showed that the type of the latter name belongs to *Riccardia palmata*, although never reported in that sense before.

COSTA RICA. S. loc. (Cole 1984 as *Metzgeria furcata* var. *fruticulosa*). PUNTARENAS: Monteverde, 15 Jan 1965, *James, W. 40b* (R, **Reed and Robinson 1971** as *Metzgeria fruticulosa*; Morales 1991 as *Metzgeria fruticulosa*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, West-Central Tropical Africa, East Tropical Africa, Southern Africa, Western Indian Ocean, Russian Far East, Eastern Asia, Indian Subcontinent, Indo-China, Australia, New Zealand, Subarctic America, Western Canada, Northwestern USA, Southwestern USA, Southeastern USA, Mexico, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

***Microlejeunea* (Spruce) Steph., *Hedwigia* 27(2): 61, 1888 (Stephani 1888c).**

Microlejeunea acutifolia Steph., *Hedwigia* 35(3): 113, 1896 (Stephani 1896). Type: Trinidad.

≡*Lejeunea acutifolia* (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 72: 270, 1992 (Schuster 1992b), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

≡*Lejeunea acutifolia* (Steph.) A.Lücking, *Div. Mikrohabitatpräf. Epiphyll. Moose*: 103, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.8; published in a thesis).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 487* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Microljeunea*' *acutifolia*).

***BELIZE.** *TOLEDO: Punta Gorda, Nov 1932, *White 73*, det. Dauphin May 2017 (MO-5247575!, **this publication**).

EL SALVADOR. S. loc. (Lücking 1995 as *Lejeunea acutifolia*; Schäfer-Verwimp 1999; Ilkiu-Borges 2000). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/5/d/3* (**Winkler 1967**).

COSTA RICA. S. loc. (Schäfer-Verwimp 1999; Ilkiu-Borges 2000). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-164* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-163*, *92-369*, *92-457*, *92-479*, *92-582* (hb. Lücking, **Lücking 1995** as *Lejeunea acutifolia*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea acutifolia*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Campbell's Wood, *Sillett 42494* (**Dauphin 2005**); Monteverde cantón, Campbell's Wood, 1,500 m, *Sillett 5-5* (U, **Gradstein et al. 1994**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34263/E* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 693*, *747.3 p.p.*, *814*, *818*, *824 p.p.*, *838 p.p.* (PMA, **Sierra et al. 2019a**).

COCOS I. S. loc. (Dauphin 1995, 1999; Schäfer-Verwimp 1999; Ilkiu-Borges 2000); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 617* (ULM, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, *Lücking 516*, *537*, *92-327* (USJ, **Bernecker-Lücking 2000**; **Dauphin 2005**); Río Genio, 5°32′57″N, 87°03′56″W, 50 m, Apr 1992, *Lücking 92-327* (USJ, **Lücking 1995** as *Lejeunea acutifolia*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Microlejeunea bullata (Taylor) Steph., *Hedwigia* 29(2): 90, 1890 (Stephani 1890c).

≡*Lejeunea bullata* Taylor, *London J. Bot. 5*: 398, 1846 (Taylor 1846a). Type: St. Vincent.

≡*Lejeunea ulicina* (Taylor) Gottsche, Lindenb. et Nees subsp. *bullata* (Taylor) R.M.Schust., *J. Hattori Bot. Lab.* 25: 55, 1962 (Schuster 1962).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 194* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Microlejeunea* cf. *bullata*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 28* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

BELIZE. S. loc. (**Fulford 1938**; Frye and Clark 1947; Whittemore and Allen 1996). *TOLEDO: Punta Gorda, Feb 1933, *White 90*, det. Fulford 1937 (MO-5375157!, **this publication**).

HONDURAS. S. loc. (Jovet-Ast 1960; Schuster 1962, 1980d, both as *Lejeunea ulicina* subsp. *bullata*; Bischler et al. 1963; Fulford 1987; Fulford and Sharp 1990; Lücking 1995 as *Lejeunea bullata*; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54225 p.p.* (**Herzog 1951**).

EL SALVADOR. S. loc. (Lücking 1995 as *Lejeunea bullata*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/2/1*, *B/6/c/5* (**Winkler 1967**).

***NICARAGUA.** *CHONTALES: Cuapa municipio, road between Rio Bizcocho and Rio el Jordan, 12°15′N, 85°16′W, 350–550 m, 18 Dec 1983, *Stevens & Montiel 22594B*, det. Dauphin May 2017 (MO-5238385! http://tropicos.org/specimen/90108650, **this publication**).

COSTA RICA. S. loc. (Jovet-Ast 1957; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Van Dunné 266* (AMD, **Kappelle 1996**). ALAJUELA: Alajuela cantón, between Vara Blanca and Poás Volcano, 31 Jan 1985, *Eggers CR 1/200* (**Pócs 2006a**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3309*, *3346.2* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**). HEREDIA: La Uvita, *Morales 249* (FLAS, **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-625* (hb. Lücking, **Lücking 1995** as *Lejeunea bullata*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea bullata*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Osa cantón, Península de Osa, Boscosa, 150 m, *Gradstein & Dauphin 9303a* (U, USJ, **Gradstein et al.**

1994). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Lücking 1995 as *Lejeunea bullata*); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34514* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31039* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 675*, *729*, *759*, *777* (PMA, **Sierra et al. 2019a**). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Lejeunea ulicina* subsp. *bullata*); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9293* (PMA, **Stotler et al. 1998** as *Lejeunea ulicina* subsp. *bullata*); Cerro Pirre, above Rancho Mojado, 900 m, *Salazar Allen & Gradstein 9245* (PMA, **Stotler et al. 1998** as *Lejeunea ulicina* subsp. *bullata*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Reiner-Drehwald et al. 2013 as *Lejeunea ulicina* subsp. *bullata*); La Chorrera distrito, Barro Colorado Island, *Shattuck 569 p.p.* (**Haynes 1933**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3165* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lutz trail, *Shattuck 569 p.p.* (F, **Stotler et al. 1998** as *Lejeunea ulicina* subsp. *bullata*); La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3148* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30844* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Fosberg and Klawe 1966; Dauphin 1995; Lücking 1995 as *Lejeunea bullata*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Camino a Cerro Pelón, 360 m, 15 Feb 1994, *Dauphin 1187* (USJ, **Dauphin 1995**, **1999**, **2005**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 276*, *540* (hb. Bernecker, **Bernecker-Lücking 2000**); Wafer Bay, 28 Jun 1932, *Howell 227 p.p.* (CAS, **Clark 1953a**); Wafer Bay, 0 m, Apr 1992, *Lücking 483* (USJ, **Bernecker-Lücking 2000**).

Also reported from Eastern Canada, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Microlejeunea capillaris (Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 819, 1915 (Stephani 1915).

≡*Lejeunea capillaris* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 163, 1864 (Gottsche 1864). Type: Brazil.

=*Microlejeunea colombiana* Bischl., *Nova Hedwigia* 5(1/2): 373, 1963 (Bischler et al. 1963), syn. fide Gradstein and Uribe (2016). Type: Colombia.

GUATEMALA. HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez et al. 1182* (USCG, Pérez 2009).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Van Melick 2016); S. loc., *Schäfer-Verwimp & Holz SV/H-0489/B* (JE, **Czumay et al. 2013**; **Dong et al. 2013**; **Heinrichs et al. 2013**, **2014a**, **2014b**; **Bechteler et al. 2016a**, **2016c**; **Zhu et al. 2017**, **2018a**, **2018b**, **2019**; **Zhu and Shu 2018**; **Shu et al. 2022**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Turrialba, Turrialba National Park, *Conejo* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**). PUNTARENAS: Osa cantón, Rincón, trail to Cerro Chocuaco, 350 m, *Gradstein & Dauphin 9333 p.p.* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Los Robles, 12 Jun 1999, *Holz CR 99-837* (GOET, CR, **Schäfer-Verwimp 2001** as *Microlejeunea colombiana*); Dota cantón, San Gerardo, Los Robles, 2,400 m, 4 Jan 2000, *Schäfer-Verwimp & Holz SV/H-0486/B* (**Schäfer-Verwimp 2001** as *Microlejeunea colombiana*).

PANAMA. S. loc. (Schäfer-Verwimp and Van Melick 2016 as *Microlejeunea colombiana*); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 1,980 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30867* (JE, **Schäfer-Verwimp 2014**); Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,450–2,600 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 30888*, *30914* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea colombiana*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Salazar Allen 4501b* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Microlejeunea crenulifolia (Gottsche) Steph., *Hedwigia* 35(3): 114, 1896 (Stephani 1896).

≡*Lejeunea crenulifolia* Gottsche, *Mexik. Leverm.*: 227, 1863 (Gottsche 1863). Type: Trinidad.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4443 p.p.*, *4490 p.p.* (PMA, **Dauphin et al. 2015**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio

Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 701* (PMA, **Sierra et al. 2019a**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Microlejeunea diversiloba (Spruce) Müll.Frib., *Lebermoose* 2(24): 654, 1915 (Müller 1915).

≡*Lejeunea diversiloba* Spruce, *J. Bot.* 14: 235, 1876 (Spruce 1876a). Type: Mexico.

=*Lejeunea cucullata δ stricta* Gottsche, Lindenb. et Nees, *Syn. Hepat. 5*: 767, 1847 (Gottsche et al. 1847), syn. fide Gottsche (1863). Type: Mexico.

≡*Microlejeunea stricta* (Gottsche, Lindenb. et Nees) Steph., *Hedwigia* 29(2): 90, 1890 (Stephani 1890c).

GUATEMALA. QUICHÉ: S. loc., *Pérez 2184* (USCG, Pérez 2009 as *Microlejeunea stricta*).

EL SALVADOR. S. loc. (Fulford and Sharp 1990 as *Microlejeunea stricta*; Schäfer-Verwimp 2014 as *Microlejeunea stricta*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/12*, *A/6/2*, *A/7/4*, *A/8/3*, *A/26/8* (**Winkler 1967** as *Microlejeunea stricta*).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014 as *Microlejeunea stricta*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Morales 2252 p.p.*, det. Morales (USJ, **Morales 1991** as *Microlejeunea stricta*; **Dauphin 2005** as *Microlejeunea stricta*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Microlejeunea stricta*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34420/C* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30759* (JE, **Schäfer-Verwimp 2014 as** *Microlejeunea stricta*); Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34756* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34136/C* (JE, **Schäfer-Verwimp 2014** as *Microlejeunea stricta*); La Pintada distrito, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 668*, *671*, *673*, *691 p.p.*, *692*, *716* (PMA, **Sierra et al. 2019a** as *Microlejeunea stricta*).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Microlejeunea epiphylla Bischl., *Nova Hedwigia* 5(1/2): 378, 1963 (Bischler et al. 1963). Type: Guadeloupe.

≡*Lejeunea epiphylla* (Bischl.) A.Lücking, *Diversit. Mikrohab. Epiphyller Moose*: 106, 1995 (Lücking 1995), nom. inval. (ICN2018 Art. 30.9; published in thesis).

GUATEMALA. ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Microlejeunea* cf. *epiphylla*). QUICHÉ: S. loc., *Pérez 2197* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

EL SALVADOR. S. loc. (Lücking 1995 as *Lejeunea epiphylla*; Ilkiu-Borges 2000). SANTA ANA: Metapán municipio, Parque Nacional Monte Cristo, Cordillera de Metapán, 14°27′N, 89°22′W, 27 Jan 1998, *Davidse 37211 p.p.*, det. Dauphin May 2017 (MO-6699950!, **this publication**); Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/18/1* (**Winkler 1967**).

***NICARAGUA.** *JINOTEGA: Ridge between Cerro Bravo and Cerro Picacho, 1,490–1,550 m, 26 May 1985, *Davidse 30513 p.p.*, det. Dauphin May 2017 (MO-6699935! https://tropicos.org/specimen/100988169, **this publication**).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp and Van Melick 2016). CARTAGO: Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**). HEREDIA: San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-100* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-106*, *92-101*, *92-354*, *92-404*, *92-492*, *92-524* (hb. Lücking, **Lücking 1995** as *Lejeunea epiphylla*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Lejeunea epiphylla*); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Península de Osa, 300 m (Eggers 2001); Osa cantón, Rincón, trail to Cerro Chocuaco, 300 m, *Gradstein & Dauphin 9317a* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**). SAN JOSÉ: Acosta cantón, El Cornelio, 1,350 m, *Dauphin et al. 2945 p.p.*, det. Ilkiu-Borges (NY, **Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). *BOCAS DEL TORO: Bocas del Toro distrito, Salt Creek, Long Beach Trail, Aug 2017, *Dauphin et al. 4632* (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,340–1,360 m, *Schäfer-Verwimp & Verwimp 34351/C*, *34377/B* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34620*, *34622/A*, *34687/B* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N,

80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34153/D*, *34155* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31059* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera, Barro Colorado, near Laboratory N Wing, 2003, *Dauphin 3197* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3133* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Laboratory Cove, 2003, *Dauphin 3144a* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Lake shore, 2003, *Dauphin 3094* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3054* (CR, PMA, **Dauphin et al. 2022**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Chagres National Park, Altos de Cerro Azul, Sendero El Cantar, 800 m, *Gradstein 9783a* (GOET, **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34266*, *34283*, *34289* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30806*, *30858* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995, 1999); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 400 m, *Lücking 92-259* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 350–500 m, Apr 1992, *Lücking 92-259* (USJ, **Lücking 1995** as *Lejeunea epiphylla*); Yglesias D, 350–500 m, Apr 1992, *Lücking 583*, *621* (USJ, **Bernecker-Lücking 2000**).

Also reported from Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America(?).

Microlejeunea subulistipa Steph., *Hedwigia* 35(3): 115, 1896 (Stephani 1896). Type: Brazil.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/8/2*, *B/6/d/1* (**Winkler 1967**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Microlejeunea valenciana Steph., *Sp. Hepat. (Stephani)* 5: 815, 1915 (Stephani 1915). Type: Venezuela.

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/26/12* (**Winkler 1967**).

Also reported from Northern South America.

Micropterygium Gottsche, Lindenb. et Nees, Syn. Hepat. 2: 233, 1845 (Gottsche et al. 1845b).

Micropterygium carinatum (Grev.) Reimers, *Hedwigia* 76(3): 166, 1936 (Reimers 1936).

≡*Jungermannia carinata* Grev., *Ann. Lyceum Nat. Hist. New York* 1(2): 276, 1825 (Greville 1825). Type: Guadeloupe.

†**COSTA RICA.** S. loc. (Gradstein 2021) Note: This must refer to Cocos I.

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 961*, det. S. R. Gradstein (USJ, MO-6699924! https://www.tropicos.org/specimen/103021324, **Dauphin 1995**, **1999**, **2005**).

Also reported from Southwestern Pacific(?), Northeastern USA(?), the Caribbean, Northern South America, Western South America, Brazil.

Micropterygium leiophyllum Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 386, 1885 (Spruce 1885). Type: Brazil.

COSTA RICA. S. loc. (Gradstein 2021). ALAJUELA: San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, 800 m, *Dauphin 2927* (NY, **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Micropterygium parvistipulum Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 383, 1885 (Spruce 1885). Type: Brazil.

PANAMA. S. loc. (Gradstein 2021). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 710 m, 1 Aug 2012, *Dauphin & Salazar Allen 4483*, *4547* (PMA, STRI, **Dauphin et al. 2015**).

Also reported from Northern South America, Western South America, Brazil.

Micropterygium pterygophyllum (Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 413, 1877 (Trevisan 1877).

≡*Jungermannia pterygophylla* Nees, *Fl. Bras. (Martius)* 1(1): 377, 1833 (Nees 1833b). Type: Brazil.

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 109977* (UC, **Norris et al. 2017**).

PANAMA. S. loc. (Costa 2017; Costa et al. 2020). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30762* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9237* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Micropterygium trachyphyllum Reimers, *Hedwigia* 73(3/4): 186, 1933 (Reimers 1933). Type: Barbados.

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15046* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15056* (BRH, MO, **Whittemore and Allen 1996**). *TOLEDO: Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge

spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18806 p.p.*, det. Dauphin May 2017 (MO-6699951!, **this publication**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38′N, 86°52′W, 1,500–1,630 m, 22 Apr 1996, *Allen 17503*, det. Dauphin May 2017 (MO-6236050! https://tropicos.org/specimen/100371089, **this publication**).

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 109974* (UC, **Norris et al. 2017**); Upala cantón, Guanacaste National Park, Sector Pitilla, Sendero Nacho, 700 m, *Dauphin 1905* (CR, USJ, **Dauphin et al. 1998; Dauphin 2005**).

PANAMA. S. loc. (Dauphin et al. 1998). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (Salazar Allen et al. 2021 as *Micropterygium* cf. *trachyphyllum*). COCLÉ: Antón distrito, N of El Valle de Antón, base of Cerro Pilón, *Crosby 4395* (MO, **Crosby 1971; Stotler et al. 1998**). COLÓN: Colón distrito, Santa Rita Ridge, *Crosby 4444* (MO, **Crosby 1971; Stotler et al. 1998**). PANAMA WEST: Capira distrito, Cerro Campana, *Crosby 4495* (MO, **Crosby 1971; Stotler et al. 1998**). PANAMA: Panamá distrito, above Altos de Cerro Azul down toward Río Chagres, 700–850 m, *Allen 9053* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, *Crosby 4535* (MO, **Crosby 1971; Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Hammel 4833* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Lewis & Dressler 7603* (MO, **Crosby 1971; Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Salazar Allen et al. 4033* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Spörle 0.7* (PMA, **Spörle 1990; Stotler et al. 1998**); Panamá distrito, Cerro Jefe, *Valdespino & Aranda* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen & Chung 5204* (PMA, **Stotler et al. 1998**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Mnioloma Herzog, *Ann. Bryol.* 3: 115, 1930 (Herzog 1930).

Mnioloma caespitosum (Spruce) R.M.Schust., *Fragm. Florist. Geobot.* 40(2): 839, 1995 (Schuster 1995a).

≡*Kantius caespitosus* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 412, 1885 (Spruce 1885). Type: Ecuador.

≡*Calypogeia caespitosa* (Spruce) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 665 (*Sp. Hepat. [Stephani]* 3: 397), 1908 (Stephani 1908g).

***HONDURAS.** *OCOTEPEQUE: La Labor municipio, Montaña del Candado, 13 km E of Nueva Ocotepeque and Cerro El Cocal, 14°27′N, 89°04′W, 2,000–2,180 m, 24 Mar 1993, *Allen 14490*, det. Dauphin May 2017 (MO-5232335! https://tropicos.org/specimen/90102261, **this publication**).

PANAMA. DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Calypogeia caespitosa*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Calypogeia caespitosa*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Calypogeia caespitosa*).

Also reported from East Tropical Africa, the Caribbean, Northern South America, Western South America, Brazil.

Mnioloma cellulosum (Spreng.) R.M.Schust., *Fragm. florist. Geobot.* 40(2): 836, 1995 (Schuster 1995).

≡*Jungermannia cellulosa* Spreng., *Syst. Veg. (ed 16) [Sprengel]* 4(1): 232, 1827 (Sprengel 1827b). Type: Guadeloupe.

=*Calypogeia crenulata* Bischl., *Candollea* 18: 35, 1962 (Bischler 1962a), syn. fide Gradstein (2021). Type: St. Kitts.

COSTA RICA. PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Calypogeia crenulata*); Monteverde, 1,550 m, *Gradstein & Solano 9614* (U, USJ, **Gradstein et al. 1994** as *Calypogeia crenulata*; **Dauphin 2005** as *Calypogeia crenulata*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Quebrada Honda in Fortuna Forest Reserve (8°45′40″N, 82°14′22″W), 1,150 m, 15 Jul 2021, *Rodriguez et al. 1102*, *1103* (UCH, **Ellis et al. 2022a**). *NASO TJËR DI COMARCA: Cerro Fábrega, Parque Internacional La Amistad, 9°07′05″N, 82°52′40″W, 3,200 m, 12 Feb 1995, *Dauphin et al. 1572A*, det. G. Dauphin Sep 2020 (CR!, **this publication**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 963*, det. G. Dauphin Mar 2021 (USJ-47199!, CR-4468327!, W-0207456! https://w.jacq.org/W0207456, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 22 Jan 1994, *Dauphin 967*, det. G. Dauphin Mar 2021 (USJ-47180!, CR-4468368!, W-0207457! https://w.jacq.org/W0207457, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Mnioloma cyclostipum (Spruce) R.M.Schust., *Fragm. Florist. Geobot.* 40(2): 843, 1995 (Schuster 1995a).

≡*Kantius cyclostipus* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 411, 1885 (Spruce 1885). Type: Ecuador.

≡*Calypogeia cyclostipa* (Spruce) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 664 (=*Sp. Hepat. [Stephani]* 3: 396), 1908 (Stephani 1908g).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 389* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**).

COSTA RICA. ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 13 Mar 2010, *Norris 5715* (UC, **Norris et al. 2017**). PUNTARENAS: Coto Brus cantón, Fila Cruces, Cerro Paraguas, *Dauphin & Chacón 1744* (CR, **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen*

698 (PMA, **Stotler et al. 1998** as *Calypogeia cyclostipa*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9272* (PMA, **Stotler et al. 1998** as *Calypogeia cyclostipa*).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 963*, *967*, det. M. I. Morales (USJ, **Dauphin 1995, 1999**, both as *Calypogeia cyclostipa*, **2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Mnioloma fissistipulum (Bischl.) R.M.Schust., *Fragm. Florist. Geobot.* 40(2): 847, 1995 (Schuster 1995a).

≡*Calypogeia fissistipula* Bischl., *Candollea* 18: 47, 1962 (Bischler 1962a). Type: Venezuela.

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4504* (PMA, **Dauphin et al. 2015**).

Also reported from Northern South America, Western South America.

Mnioloma rhynchophyllum Herzog, *Ann. Bryol.* 3: 120, 1930 (Herzog 1930). Lectotype (Söderström and Hentschel 2023: 15): Costa Rica, Vicinity of Orosi, province of Cartago, 30 Mar 1924, *Standley 39843* (JE-04001641 https://je.jacq.org/JE04001641, isolectotype JE-04001642 https://je.jacq.org/JE04001642).

≡*Calypogeia rhynchophylla* (Herzog) Bischl., *Candollea* 18: 26, 1962 (Bischler 1962a).

COSTA RICA. S. loc. (Bonner 1977 as *Calypogeia rhynchophylla*; Cole 1982, 1983, both as *Calypogeia rhynchophylla*; Gradstein 1992c as *Calypogeia rhynchophylla*; Renner and Brown 2008); S. loc., *Standley* (JE, G, **Schuster 2000c**). ALAJUELA: San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Dauphin 2929* (NY, **Dauphin 2005**). CARTAGO: Paraíso cantón, Orosi, 1,000 m, 30 Mar 1924, *Standley 39843* (JE-04001641, isolectotype JE-04001642, B-20831, **TYPE, Herzog 1930, 1938**; **Bischler 1962a** as *Calypogeia rhynchophylla*, **Fulford 1968** as *Calypogeia rhynchophylla*; **Geissler and Bischler 1985**; **Morales 1991** as *Calypogeia rhynchophylla*; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin & Eakin 224* (B, FLAS, HAC, U, **Morales 1991** as *Calypogeia rhynchophylla*; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Morales & Griffin 200* (USJ, FLAS, **Morales 1991** as *Calypogeia rhynchophylla*). PUNTARENAS: S. loc. (Merwin et al. 2001 as *Calypogeia rhynchophylla*); Monteverde cantón, Cerro Amigos, 10°18′N, 84°48′W, 27 Mar 1992, *Lyon 466*, det. Dauphin May 2017 (MO-4411698!, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Calypogeia rhynchophylla*); Monteverde cantón, trail NE from Estación Biológica Monteverde, 10°19′N, 84°48′W, 27 Feb 1992, *Lyon 89*, det. Dauphin May 2017 (MO-4412795!, **this publication**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Institute of Hydraulic Resources and Electricity's plant nursery, 1,100 m (**Salazar Allen et al. 2021**). PANAMA WEST: San Carlos distrito, Cerro Pelado, 30 Jul 2001, *Salazar Allen et al. 18832*, *18833*, *18834*, *18835*, *18836*, *18837* (PMA, **Dauphin 2007**).

COCOS I. S. loc. (Dauphin 1995 as *Calypogeia rhynchophylla*; Merwin et al. 2001 as *Calypogeia rhynchophylla*); Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 965.1*, det. G. Dauphin Mar 2021 (USJ-47182!, CR-4468311!, W-0207458! https://w.jacq.org/W0207458, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 550 m, 15 Feb 1994, *Dauphin 1212* (USJ, CR, **Dauphin 1995, 1999**, both as *Calypogeia rhynchophylla*, **2005**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 965*, *982* (USJ, **Dauphin 1995, 1999**, both as *Calypogeia rhynchophylla*, **2005**).

Not found outside Central America.

***Monoclea* Hook., *Musci. Exot.* 2: tab. clxxiv, 1820 (Hooker 1820).**

Monoclea gottschei Lindb., *Rev. Bryol.* 13: 102, 1886 (Lindberg 1886) subsp. ***gottschei***. Lectotype: Peru.

=*Monoclea forsteri* auct. non Hook., *Musci Exot.* 2: tab. clxxiv, 1820 (Hooker 1820). Type: New Zealand.

=*Monoclea gottschei* Lindb. subsp. *elongata* Gradst. et Mues, *Pl. Syst. Evol.* 189: 133, 1992 (Gradstein et al. 1992). Type: Bolivia.

=*Monoclea gottschei* subsp. *neotropica* Spörle, H.Becker, N.Salazar et M.P.Gupta, *J. Hattori Bot. Lab.* 70: 151, 1991 (Spörle et al. 1991), nom. inval. (ICN2018 Art. 39.1; no Latin description), syn. fide Stotler et al. (1998). Original material: Panama, Chiriquí, Serranía de Tabasara, Fortuna region (8°45′N, 82°15′W), Jun 1988, s. coll.

GUATEMALA. S. loc. (**Stephani 1900b**; Pagán 1939a; Hässel 1957, 1962; Campbell 1963; Miller et al. 1983; Campbell 1987). ALTA VERAPAZ: Cobán, 1,500 m, 25 Apr 1882, *Lehmann 1345* (G, **Stephani 1894a**); E of Tactic on road to Tamahu, *Standley 71081* (NY, USCG, Pérez 2009 as *Monoclea gottschei* subsp. *elongata*; **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 13*, *19*, *49*, *55*, *76*, *96*, *138*, *167*, *183*, *207*, *216*, *229*, *269*, *291*, *444*, *533* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: S. loc., *Pérez 1411* (USCG, Pérez 2009 as *Monoclea gottschei* subsp. *elongata*). QUICHÉ: Chajul municipio, Amajchul, Montaña Qetxib, 15°41′9.6″N, 90°59′44.8″W, 1,283 m, 2007, *Pérez 2236* (USCG, Pérez 2009 as *Monoclea gottschei* subsp. *elongata*). SACATEPÉQUEZ: Antigua, *Standley 58984* (NY, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). SAN MARCOS: S. loc., *Standley 68558* (NY, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*; **Pérez 2009** as *Monoclea gottschei* subsp. *elongata*).

BELIZE. CAYO: Southern Maya Mountains, Dec 1993, *Allen 15141* (BRH, MO, **Whittemore and Allen 1996**; **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*).

HONDURAS. S. loc., *Allen 14119*, *14170*, *14460*, *17452*, *17762*, *17776* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). GRACIAS A DIOS: Brus Laguna municipio, trail near Rio Platano, *Wilson 69* (NY, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*).

EL SALVADOR. *AHUACHAPÁN: San Francisco Menéndez municipio, El Impossible, Positas river, 13°51′06′N, 89°59′12′W, 18 Jan 1998, *Monro 1963*, det. Brinda and Dauphin Jun 2017 (MO-5280782!, **this publication**). SAN SALVADOR: Monte Cristo, *Thompson* (NY, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*).

NICARAGUA. ESTELÍ: La Trinidad municipio, highway to San Nicholas, 10 km W of La Trinidad, *Stevens 14837* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). JINOTEGA: Jinotega municipio, Macizos de Peias Blancas, 13°16′N, 85°40′W to 13°17′N, 85°41′W, 1,350–1,650 m, *Stevens 11386* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). MATAGALPA: Matagalpa municipio, Fuente Pura, *Moreno 18957* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*).

COSTA RICA. S. loc. (**Stephani 1900b**; Pagán 1939a; Haupt 1942; Hässel 1957, 1962; Campbell 1963, 1987; Miller et al. 1983; Cole 1984; Gradstein 1999a as *Monoclea gottschei* subsp. *elongata*; Dauphin 2005 as *Monoclea gottschei* subsp. *elongata*; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Van Velzen & Wijtzes* (AMD, Kappelle 1996). ALAJUELA: Alajuela cantón, Poás Volcán, E slope, 6,000 ft (1,829 m), 25 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991** as *Monoclea forsteri*); Poás Volcano, 2 Aug 1940, *Haupt* (**Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**); San Ramón cantón, Peñas Blancas, *Lyon 46*, *51* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); San Ramón cantón, San Ramón, Reserva Biológica Alberto Brenes, *Traña 5* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*). CARTAGO: Los Angeles, San Miguel, *Chacón 758* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Paraíso cantón, Orosi, Tapantí National Park, *Morales 1729* (**Morales 1991**; **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Paraíso cantón, Tapantí National Park, *Gómez-Pignataro 18822*, *18849*, *18856* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Turrialba cantón, Volcán Turrialba, *Stephani 1130* (**Morales 1991** [rejected as *Monoclea gottschei*]); Turrialba cantón, Volcán Turrialba, 2,000 m, 17 Jan 1882, *Lehmann 1130* (G, **Stephani 1894a**; **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Turrialba, *Maas 803* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1959*, *2002* (**Morales 1991**; **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); San Rafael cantón, road between San Rafael and Rio Las Vueltas, *Stevens 13920* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Quebrada Gonzáles, *Anton 224* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*). PUNTARENAS: Buenos Aires cantón, Valle del Silencio, *Quesada 1186* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Coto Brus cantón, Fila Cruces, Laguna Gamboa, *Dauphin 1716* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Coto Brus cantón, Parque Internacional La Amistad, Santa María de Pittier, *Dauphin 1401* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, *Gradstein 9427*, *9428* (GOET, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, *Lyon 22*, *96*, *105* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, *James, M. 9* (**Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Monteverde, *Wheeler 247* (OSC, **Wheeler 2000**); Monteverde, 7 Jun 1966, *James, M. 9* (R, **Reed and Robinson 1971**); Osa cantón, Rincón, *Gradstein & Dauphin 9342* (GOET, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). SAN JOSÉ: Aserrí cantón, Tablazo, Pan-American Highway, *Haupt* (**Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005 as *Monoclea gottschei* subsp. *elongata*); Dota cantón, San Gerardo, *Gradstein* (GOET, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Montañas de Tablazo, *Haupt* (**Morales 1991** as *Monoclea forsteri*); Montes de Oca cantón, San Pedro, Centro Universitaria, *Gradstein* (GOET, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Moravia cantón, La Hondura, *King C91-106* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Pérez Zeledón cantón, Páramo Buenavista, *Anton 88* (CR, **Dauphin 2005** as *Monoclea gottschei* subsp. *elongata*).

PANAMA. S. loc. (Gradstein et al. 1992 as *Monoclea gottschei* subsp. *elongata*; Stotler et al. 1998 as *Monoclea gottschei* subsp. *elongata*; Salazar Allen et al. 2017 as *Monoclea gottschei* subsp. *elongata*). BOCAS DEL TORO: S. loc., *Hammel 6113* (MO, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). CHIRIQUÍ: S. loc., *Kirkbride & Duke 860* (MO, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*); S. loc., *Salazar Allen et al. 21397* (PMA, **Forrest et al. 2011**); "western Panamá" (**Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*); Boquete distrito, Palo Alto, *Hammel 7436C* (MO, U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna (Stotler et al. 1998 as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna Dam, *Hammel 2101* (MO, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna Dam, *Hammel 2105*

(MO, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*; **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Institute of Hydraulic Resources and Electricity's plant nursery, 1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Hammel 2286* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna, *Salazar Allen et al. 6245*, *6250* (PMA, U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna, *Spörle 1.2* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Fortuna, *Spörle 1.20* (PMA, **Spörle 1990**); Gualaca distrito, Fortuna, *Valdespino et al. 21*, *30*, *105*, *106* (PMA, U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Gualaca distrito, Serrania de Tabasani, Fortuna region, Jun 1988 (**Spörle et al. 1991** as *Monoclea gottschei* subsp. *neotropica*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34184* (JE, **Schäfer-Verwimp 2014** as *Monoclea gottschei* subsp. *elongata*). DARIÉN: S. loc. (Schäfer-Verwimp 2014 as *Monoclea gottschei* subsp. *elongata*); between Cerro Pirre and Pijibasal, *Folsom 6418* (U, **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*); Pinogana distrito, ~20 km SSW of Boca de Cupé, ~200 m, *Allen 8664* (MO, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*). NGÄBE-BUGLÉ COMARCA: Kankintú distrito, Cerro Colorado, *Antonio 2605*, *4865* (MO, NY, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*; **Bischler-Causse et al. 2005** as *Monoclea gottschei* subsp. *elongata*). VERAGUAS: S. loc., *Antonio 2045* (MO, **Stotler et al. 1998** as *Monoclea gottschei* subsp. *elongata*). S. loc. (Schäfer-Verwimp 2014 as *Monoclea gottschei* subsp. *elongata*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Monodactylopsis R.M.Schust., *Nova Hedwigia* 56(1/2): 45, 1993 (Schuster 1993).

Monodactylopsis monodactyla (Spruce) R.M.Schust., *Nova Hedwigia* 69(3/4): 523, 1999 (Schuster 1999).

≡*Cephalozia monodactyla* Spruce, *Cephalozia*: 28, 1882 (Spruce 1882). Type: Brazil.

≡*Arachniopsis monodactyla* (Spruce) R.M.Schust., *Nova Hedwigia* 10(1/2): 30, 1965 (Schuster 1965).

≡*Zoopsidella monodactyla* (Spruce) R.M.Schust. ex Gradst. et Hekking, *J. Hattori Bot. Lab.* 66: 219, 1989 (Gradstein and Hekking 1989), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Arachniopsis monodactyla*; Linares and Uribe 2002 as *Arachniopsis 'monodactylus'*; Costa and Silva 2003 as *Arachniopsis monodactyla*; Gradstein and Costa 2003 as *Arachniopsis monodactyla*; Engel and Smith Merrill 2004; Lavocat Bernard 2018; Costa et al. 2020; Gradstein 2021). PUNTARENAS: Osa cantón, Rincón, trail Boscosa-Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9320a*, *9320b* (U, USJ, **Gradstein et al. 1994** as *Arachniopsis monodactyla*; **Dauphin 2005** as *Arachniopsis monodactyla*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Myriocoleopsis Schiffn., *Hedwigia* 81(5/6): 234, 1944 (Schiffner 1944).

Myriocoleopsis minutissima (Sm.) R.L.Zhu, Y.Yu et Pócs, *Phytotaxa* 183(4): 293, 2014 (Yu et al. 2014) subsp. ***minutissima***.

≡*Jungermannia minutissima* Sm., *Engl. Bot.* 23: table 1633, 1806 (Smith and Sowerby 1806). Type: Britain.

=*Cololejeunea coseguinana* L.Clark, *Proc. Calif. Acad. Sci.*, ser. 4, 27: 599, 1953 (Clark 1953a), syn. fide Pócs et al. (2014). Holotype: Nicaragua, near shore of Gulf of Fonseca, east of Constamlino Volcano, 7 Jul 1932, *Howell 245* (CAS-214866 https://www.gbif.org/occurrence/1426338196).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Cololejeunea minutissima*).

NICARAGUA. CHINANDEGA: El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 242 p.p.*, *245* (CAS-372426, **Clark 1953a** as *Cololejeunea coseguinana*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Arabian Peninsula, China, Eastern Asia, Indian Subcontinent(?), Indo-China, Papuasia, Australia, Southwestern Pacific, South-Central USA, Southeastern USA, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Myriocoleopsis minutissima subsp. ***myriocarpa*** (Nees et Mont.) R.L.Zhu, Y.Yu et Pócs, *Phytotaxa* 183(4): 294, 2014 (Yu et al. 2014).

≡*Lejeunea myriocarpa* Nees et Mont., *Hist. Phys. Cuba, Bot., Pl. Cell.*: 473, 1842 (Montagne 1842b). Type: Cuba.

≡*Cololejeunea minutissima* (Sm.) Steph. subsp. *myriocarpa* (Nees et Mont.) R.M.Schust., *J. Elisha Mitchell Sci. Soc.* 71(2): 232, 1955 (Schuster 1955b).

***HONDURAS.** *COMAYAGUA: Siguatepeque municipio, Codefohr Forestry School, 14°35′N, 87°47′W, 1,080 m, 10 Apr 1996, *Allen 17168*, det. Dauphin Jun 2017 (MO-6230330! https://www.tropicos.org/specimen/100367481, **this publication**).

***NICARAGUA.** *ESTELÍ: Estelí municipio, road to San Juan de Limay, 13°12′54″N, 86°25′26″W, 1,150 m, 6 May 2010,

Magill 13936, det. Dauphin Jun 2017 (MO-6235702! https://tropicos.org/specimen/100363747, **this publication**).

COSTA RICA. CARTAGO: Turrialba, *Bayer* (USJ, **Gradstein et al. 1994** as *Cololejeunea minutissima* subsp. *myriocarpa*; **Dauphin 2005** as *Cololejeunea minutissima* subsp. *myriocarpa*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34619* (JE, **Schäfer-Verwimp 2014** as *Cololejeunea minutissima* subsp. *myriocarpa*).

Also reported from West Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Malesia, Australia, Southeastern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Myriocoleopsis tixieri Pócs et Gradst., *Mem. New York Bot. Gard.* 121: 579, 2021 (Gradstein 2021).

≡*Cololejeunea tixieri* M.I.Morales et G.Dauphin, *Trop. Bryol.* 14: 133, 1998 (Morales and Dauphin 1998), nom. illeg. (ICN2018 Art. 53.1; hom. illeg. non Onr. 1989). Holotype: Panama, Bocas del Toro, P.I.L.A., C. Fábrega, 9°07′05″N, 82°52′40″W, 3,335 m, *Dauphin, León & Matarrita 1556* (USJ-47774, isotypes CR, PMA).

≡*Cololejeunea dauphinii* R.L.Zhu, *J. Bryol.* 28(3): 277, 2006 (Zhu 2006).

?COSTA RICA. S. loc. (Bôas-Bastos and Bastos 2016 as *Cololejeunea dauphinii*; Gradstein 2021). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. S. loc. (Bôas-Bastos and Bastos 2016 as *Cololejeunea dauphinii*; Gradstein 2021). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 9°07′05′N, 82°52′40″W, 3,335 m, *Dauphin et al. 1556* (USJ-47774, CR, PMA, **TYPE** of *Cololejeunea tixieri*, **Morales and Dauphin 1998** as *Cololejeunea tixieri*; **Crosby and Engel 2006** as *Cololejeunea tixieri*; **Zhu 2006** as *Cololejeunea dauphinii*); Parque Internacional La Amistad, Cerro Fábrega, 9°07′05′N, 82°52′40″W, 3,335 m, *Dauphin* (Dauphin et al. 2006 as *Cololejeunea tixieri*); Parque Internacional La Amistad, Cima del Cerro Fábrega, 3,350 m, *Dauphin et al. 1556* (**Pócs et al. 2014** as *Cololejeunea dauphinii*).

Also reported from Western South America, Brazil.

Mytilopsis Spruce, *Cephalozia*: 90, 1882 (Spruce 1882).

Mytilopsis albifrons Spruce, *Cephalozia*: 91, 1882 (Spruce 1882). Type: Peru.

COSTA RICA. S. loc. (Lavocat Bernard and Reeb 2016). GUANACASTE: Liberia cantón, Guanacaste National Park, Cacao Biological Station, 1,500 m, *Dauphin & Valdelomar 2470* (**Dauphin et al. 1998**; **Dauphin 2005**).

PANAMA. S. loc. (Dauphin et al. 1998; Lavocat Bernard and Reeb 2016). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Gualaca distrito, Fortuna Forest Reserve, trail along Río Hornito, 1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Dauphin* (GOET, PMA, **Stotler et al. 1998**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30783* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Nardia Gray, *Nat. Arr. Brit. Pl.* 1: 694, 1821 (Gray 1821).

Nardia succulenta (A.Rich.) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 519, 1885 (Spruce 1885).

≡*Jungermannia succulenta* A.Rich., *Nov. Stirp. Pug.* 4: 43, 1832 (Lehmann 1832). Type: St. Kitts.

***GUATEMALA.** *QUETZALTENANGO: Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 2,094 m, 13 Dec 2004, *Quedensley 2002*, det. Dauphin Sep 2017 (MO, W-0089080! https://w.jacq.org/W0089080, **this publication**); Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 2,094 m, 9 May 2005, *Quedensley 2305*, det. Dauphin Sep 2017 (MO, W-0089081! https://w.jacq.org/W0089081, **this publication**).

COSTA RICA. ALAJUELA: Poás Volcano, 2,520 m, 30 Jul 1977, *Griffin & Araya 8* (USJ, FLAS, **Morales and Griffin 1983**; **Engel 1988**; **Morales 1991**; **Dauphin 2005**); San Carlos cantón, Arenal (**Jongmans et al. 2001**); San Carlos, Volcán Arenal, 14 Dec 1977, *Balázs B/77/14/B*, det. Dauphin Jan 2017 (EGR, CR!, **this publication**); San Ramón cantón, 10°02′0″N, 84°31′10″W, 13 Dec 1993, *Hammel 19349*, det. Dauphin May 2017 (MO-5280970!, **this publication**). *CARTAGO: Paraíso cantón, Cerro Asunción, 9°36′00″N, 83°46′00″W, 3,000 m, 26 Feb 1996, *Dauphin et al. 2224*, det. G. Dauphin Nov 2020 (CR!, **this publication**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, *Dauphin 1866* (CR, **Dauphin 2005**).

PANAMA. NGÄBE-BUGLÉ COMARCA: Nole Duima distrito, Cerro Colorado Copper Mine, *Croat 33185* (MO, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil(?).

Neesioscyphus Grolle, Österr. *Bot. Z.* 111(1): 19, 1964 (Grolle 1964a).

Neesioscyphus argillaceus (Nees) Grolle, Österr. *Bot. Z.* 111(1): 24, 1964 (Grolle 1964a).

≡*Jungermannia argillacea* Nees, *Fl. Bras. (Martius)* 1(1): 338, 1833 (Nees 1833b). Type: Brazil.

?COSTA RICA. S. loc. (Campos and Uribe 2012; Gradstein 2021). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. S. loc. (Campos and Uribe 2012). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,170 m, *Stotler & Crandall-Stotler 3502* (ABSH, PMA, **Stotler et al. 1998**).

Also reported from Northern South America, Western South America, Brazil.

Neesioscyphus bicuspidatus (Steph.) Grolle, *Rev. Bryol. Lichénol.* 34(1/2): 182, 1966 (Grolle 1966a).

≡*Isotachis bicuspidata* Steph., *Symb. Antill.* 2: 471, 1901 (Stephani 1901b). Lectotype: Guadeloupe.

COSTA RICA. S. loc., *Dauphin 2042* (H, **Vilnet et al. 2011**; **Feldberg et al. 2014**). ALAJUELA: Poás National Park, *Morales & Canessa 552* (USJ, **Dauphin et al. 1998**; **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Fila Cruces, Finca Ilama, 1,000–1,200 m, *Dauphin & Chacón 1936*, det. G. Dauphin Jun 2017 (CR, MO-4427247!, **Dauphin et al. 1998**; **Dauphin 2005**); Coto Brus cantón, Fila Cruces, Laguna Gamboa, 8°57′00′N, 83°04′20′W, 7 Jun 1995, *Dauphin 1737*, det. Dauphin Jun 2017 (MO-4427248!, **this publication**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 4 Mar 1992, *Lyon 159*, det. Whittemore 1995 (MO-4438588!, **this publication**).

PANAMA. NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 355* (PMA, **Dauphin 2007**).

Also reported from Mexico, the Caribbean, Brazil.

Neesioscyphus carneus (Nees) Grolle, Österr. *Bot. Z.* 111(1): 20, 1964 (Grolle 1964a).

≡*Jungermannia carnea* Nees, *Fl. Brasil. Enum. Pl.* 1: 337, 1833 (Nees 1833b). Type: Brazil.

PANAMA. S. loc. (Gradstein 2021). VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 785 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34292* (JE, **Schäfer-Verwimp 2014**).

Also reported from Western South America, Brazil.

***Neurolejeunea* Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).**

Neurolejeunea breutelii (Gottsche) A.Evans, *Bull. Torrey Bot. Club* 34(1): 13, 1907 (Evans 1907c).

≡*Lejeunea breutelii* Gottsche, *Syn. Hepat.* 3: 324, 1845 (Gottsche et al. 1845a). Type: St. Kitts.

GUATEMALA. S. loc. (Lücking 1995; Bastos 2004). ALTA VERAPAZ: Cobán, *Türckheim 1957* (NY, **Gradstein 1994**; **Freire 2006**; **Pérez 2009**); Cobán, 1,310 m, *Türckheim* (**Schuster 1980d**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 157* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Neurolejeunea* '*breuttelii*'). HUEHUETENANGO: S. loc., *Pérez 1452* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2235* (USCG, Pérez 2009).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15229B* (BRH, MO, **Whittemore and Allen 1996**). *TOLEDO: Bladen Nature Reserve, Richardson Creek, 16°33′N, 88°48′W, 2–3 Mar 1987, *Davidse 31929*, det. Dauphin May 2017 (MO-5238570!, **this publication**); Bladen Nature Reserve, Richardson Creek, 16°33′N, 88°48′W, 2–3 Mar 1987, *Davidse 31935*, det. Dauphin May 2017 (MO-5238379!, **this publication**).

HONDURAS. S. loc. (Schuster 1954; Lücking 1995; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53385*, *55627* (JE, **Herzog 1951**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, 1928, *Standley* (**Schuster 1980d**). COMAYAGUA: Siguatepeque, *Standley 56380* (S, **Gradstein 1994**); Siguatepeque, 1,080–1,400 m, *Standley* (**Schuster 1980d**). CORTÉS: Santa Cruz de Yojoa municipio, Lake Yojoa, *Morton 7640* (NY, **Gradstein 1994**). *LEMPIRA: Gracias municipio, Montaña de Celaque, SE part of massif, 14°33′N, 88°39′W, 24 May 1991, *Davidse & Zúñiga 34665 p.p.*, det. Dauphin May 2017 (MO-6699934!, **this publication**).

***NICARAGUA.** *ATLÁNTICO NORTE: Siuna municipio, road from Siuna to El Dos, 13°46′N, 84°47′W, 12 Dec 1980, *Stevens 18720*, det. Dauphin May 2017 (MO-5228164! http://tropicos.org/specimen/90103079, **this publication**). *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, top and N slope of ridge SW of finca El Cielo, S of Rio Gusaneras, 13°15′N, 85°42′W, 16 Jan 1979, *Stevens 11626 p.p.*, det. Dauphin May 2017 (MO-6699920! http://tropicos.org/specimen/100988644, **this publication**).

COSTA RICA. GUANACASTE: Bagaces cantón, Fortuna, Represa Cabromico, *Chavarría 1483* (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-391*, *94-32* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Campbell's Wood, 1,550 m, *Sillett 3-8* (U, **Gradstein et al. 1994**); Monteverde cantón, Campbell's Wood, *Sillett 42436* (**Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Osa cantón, Osa Peninsula, Región de Los Mogos, Cerro Helado, 250–300 m, *Gradstein & Dauphin 9361* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, trail to Cerro Chocuaco, 250 m, *Gradstein & Dauphin 9332* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Hornito, Chiriquí River, 1,000 m, *Salazar Allen et al. 577* (PMA, **Stotler et al. 1998**); COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34110*, *34145* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Zetek 4, *Willis 56* (PMA, **Stotler et al. 1998**; **Dauphin et al.**

2022). VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34299/C* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34327* (JE, **Schäfer-Verwimp 2014**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Neurolejeunea sastreana Gradst., *Bryologist* 92(3): 345, 1989 (Gradstein 1989). Type: Puerto Rico.

COSTA RICA. HEREDIA: Sarapiquí cantón, Rara Avis, 700 m, 11–13 Jan 1994, *Cascante* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480–700 m, *Lücking 32477* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-12* (USJ, **Gradstein et al. 1994**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Neurolejeunea seminervis (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

≡*Lejeunea seminervis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 84, 1884 (Spruce 1884). Type: Brazil/Venezuela.

GUATEMALA. S. loc. (Lücking 1995; Ilkiu-Borges 2000; Dauphin et al. 2015). ALTA VERAPAZ: Panzós municipio, Cerca del Río Polochic, abajo de Panzós, *Maxon & Hay 3095* (US, Y, **Gradstein 1994**; **Freire 2006**; **Pérez 2009**). HUEHUETENANGO: S. loc., *Pérez 1415* (USCG, Pérez 2009).

BELIZE. S. loc. (**Fulford 1938**; Whittemore and Allen 1996).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Dauphin et al. 2015). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-82* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-82* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Cuadrante 00,03 parcela de 1 ha, 8°40′02″N, 80°35′21″W, 728 m, 17 Jul 2013, *Sierra et al. 219 p.p.* (PMA, **Dauphin et al. 2015**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Noteroclada Taylor ex Hook.f. et Wilson, *London J. Bot.* 3: 166, 1844 (Hooker and Wilson 1844).

Noteroclada confluens Taylor, *London J. Bot.* 3: 166, 1844 (Hooker and Wilson 1844). Type: Brazil.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). CARTAGO: San Gerardo, 5 km NW crater Irazú, 2,000 m, *Gómez-Pignataro 19876* (JE, **Crandall-Stotler et al. 2010**). LIMÓN: Cordillera de Talamanca, 20 Jan 2000, *Holz CR 00-186* (STU, **Schütz et al. 2016**). SAN JOSÉ: Dota cantón, Copey, Reserve Forestal Los Santos, Pan-American Highway sur km 93, 3,200 m, *Gradstein 9730* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Pérez Zeledón cantón, Villa Mills, Base del Páramo Buenavista, *Traña 82* (CR, **Dauphin 2005**).

Also reported from Mexico, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Nowellia Mitt., *Nat. Hist. Azores*: 321, 1870 (Mitten 1870).

Nowellia curvifolia (Dicks.) Mitt., *Nat. Hist. Azores*: 321, 1870 (Mitten 1870).

≡*Jungermannia curvifolia* Dicks., *Fasc. Pl. Crypt. Brit.* 2: 15, 1790 (Dickson 1790). Type: Britain.

GUATEMALA. S. loc. (Schuster 1974; Fulford and Sharp 1990; Gradstein et al. 2001b; Damsholt 2002; Linares and Uribe 2002; Schuster 2002). ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim 6316* (M, **Grolle 1968c**). BAJA VERAPAZ: Finca Bucaral, 6,000 ft (1,829 m), *Sharp 2784* (TENN, **Fulford 1968**; **Freire 2006**); Purhulhá municipio, Civija, 4,000 ft (1,219 m), *Sharp 5167 p.p.* (TENN, **Fulford 1968**; **Freire 2006**). EL PROGRESO: Finca Piamonte, 2,400–2,500 m, *Steyermark 43434* (F, **Fulford 1968**; **Freire 2006**); Jicaro, 4,600 ft (1,402 m), *Sharp 2689 p.p.* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); Morazán municipio, above Morazán, 4,300 ft (1,310 m), *Sharp 5097* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: S. loc., *Pérez 1249* (USCG, Pérez 2009); San Juan Ixcoy, 8,800 ft (2,682 m), *Sharp 4988 p.p.* (TENN, **Fulford 1968**; **Freire 2006**). QUETZALTENANGO: Above Chiquival, 7,700 ft (2,347 m), *Sharp 2076* (TENN, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); above Chiquival, 7,700 ft (2,347 m), *Sharp 2077* (TENN, **Fulford 1968**; **Freire 2006**). QUICHÉ: S. loc., *Pérez 2329* (USCG, Pérez 2009); Nebaj, 8,500 ft (2,591 m), *Sharp 2527* (TENN, **Fulford 1968**; **Freire 2006**). TOTONICAPÁN: S. loc., 3,100–3,200 m, *Standley 84549* (F, **Fulford 1968**; **Freire 2006**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, 14°33′N, 88°38′W, 1,400 m, *Allen 11833*, det. Whittemore 1993 (MO! http://tropicos.org/specimen/90009996, **this publication**).

COSTA RICA. S. loc. (Arnell 1956a; Jovet-Ast 1960; Schuster 1974; Cole 1982, 1983; Schuster 1983a; Fulford and Sharp 1990; Damsholt 2002); Cordillera de Talamanca (**Holz and**

Gradstein 2005b; Holz 2006); Cordillera de Talamanca, *Kappelle 4617a* (U, **Kappelle 1996**); Crispinis, 2,800 m (JE, **Grolle 1968c**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 2444* (CR, **Dauphin 2005**). HEREDIA: Barva cantón, Volcán Barva, *Griffin et al. D208* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**). LIMÓN: Talamanca cantón, Valle del Silencio, *Quesada 1515* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Pittier, *Dauphin 1596* (CR, **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723a* (JE, B, S, **Herzog 1938**; **Morales 1991**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43747*, det. Herzog (JE, B-18532, S, **Herzog 1938**; **Grolle 1968c**; **Morales 1991**; **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**).

PANAMA. CHIRIQUÍ: S. loc., *Schäfer-Verwimp & Verwimp 30924* (M, **Feldberg et al. 2016**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia(?), Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Eastern Canada, North-Central USA, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Nowellia evansii Grolle, *J. Hattori Bot. Lab.* 31: 33, 1968 (Grolle 1968c). Type: Jamaica.

=*Nowellia caribbeania* Fulford, *Mem. New York Bot. Gard.* 11(3): 329, 1968 (Fulford 1968), syn. fide Robinson (1970). Type: Venezuela.

GUATEMALA. S. loc. (Fulford et al. 1970 as *Nowellia caribbeania*; Schuster 2002). ALTA VERAPAZ: Road to Tamahú, 1,500–1,600 m, *Standley 91494* (F, **Fulford 1968** as *Nowellia caribbeania*; **Freire 2006** as *Nowellia caribbeania*; **Pérez 2009** as *Nowellia caribbeania*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 63* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15293* (BRH, MO, **Whittemore and Allen 1996**).

HONDURAS. S. loc. (Fulford et al. 1970 as *Nowellia caribbeania*; Schuster 2002). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Piedra Herrada, Cerro de Uyuca, 1,500–1,650 m, *Standley 4885*, *11896* (F, **Fulford 1968** as *Nowellia caribbeania*).

COSTA RICA. S. loc. (Fulford et al. 1970 as *Nowellia caribbeania*; Cole 1982, 1983, both as *Nowellia caribbeania*; Schuster 2002). SAN JOSÉ: Dota cantón, south of El Empalme, *Little 5637* (hb. Little, **Fulford 1968** as *Nowellia caribbeania*; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005** as *Nowellia caribbeania*).

Also reported from the Caribbean, Northern South America, Western South America.

Nowellia reedii H.Rob., *Bryologist* 73(1): 150, 1970 (Robinson 1970). Holotype: Costa Rica, Puntarenas, near Monteverde, 4,300 ft, Feb 1969, *James 1969-42* (US-00072997 http://n2t.net/ark:/65665/3ee024c17-e8f2-4c7a-80a3-a0fde06804e1, isotype hb. REED).

COSTA RICA. S. loc. (Cole 1982, 1983; Schuster 1983a; Gradstein 1992c; Gradstein et al. 2001b; Graham et al. 2016; Costa et al. 2020). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, 29 Oct 1995, *Dauphin 2462* (CR, USJ, MO-2949534, **Dauphin 2005**). PUNTARENAS: Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-42* (US-00072997, hb. Reed, **TYPE**, **Robinson 1970**; **Reed and Robinson 1971**; **Geissler and Bischler 1989**; **Morales 1991**; **Dauphin 2005**).

Also reported from Northern South America, Western South America, Brazil.

Nowellia yunckeri Fulford, *Mem. New York Bot. Gard.* 11(3): 329, 1968 (Fulford 1968). Holotype: Honduras, near Siguatepeque, *Yuncker 6527* (NY ex DPU).

HONDURAS. S. loc. (Schuster 1974, 1983a, 2002; Graham et al. 2016); S. loc., *Standley 56211* (F, **Fulford 1968**). COMAYAGUA: Siguatepeque municipio, El Achiote, *Yuncker 6408* (DPU, **Fulford 1968**); Siguatepeque, *Yuncker 6527* (NY ex DPU, **TYPE**, **Fulford 1968**; **Geissler and Bischler 1989**).

Also reported from Northern South America.

Odontolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 127, 1893 (Schiffner 1893a).

Odontolejeunea decemdentata (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 175, 1912 (Stephani 1912a).

≡*Lejeunea decemdentata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 148, 1884 (Spruce 1884). Type: Ecuador.

=*Odontolejeunea tocoriensis* Steph., *Hedwigia* 35(3): 117, 1896 (Stephani 1896), syn. fide Teeuwen (1989). Lectotype (Teeuwen 1989: 10 as "holotype"): Costa Rica, Quebrada de Tocori, Mar 1893, *Tonduz* (G-00112858 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=141822&lang=en, isolectotype BM).

=*Odontolejeunea longispica* A.Evans, *Bull. Torrey Bot. Club* 35(8): 380, 1908 (Evans 1908a), syn. fide Teeuwen (1989). Type: Jamaica.

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 87* (USCG, Pérez 2009); S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc. (Stephani 1912a as *Odontolejeunea tocoriensis*; Pagán 1942b as *Odontolejeunea tocoriensis*; Geissler and Bischler 1989; Schäfer-Verwimp and Giancotti 1993; Reiner-Drehwald 1999; Lavocat Bernard et al. 2009; Schäfer-Verwimp

and Pócs 2009; Schäfer-Verwimp 2014; Lavocat Bernard 2018). ALAJUELA: Cordillera Central, *Eggers 1*, *36* (U, **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Cordillera Central, 1985, *Eggers CR 1/36* (U, **Teeuwen 1989**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110378c* (UC, **Norris et al. 2017**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 11 Mar 2010, *Risk 17213* (UC, **Norris et al. 2017**). CARTAGO: Jiménez cantón, Rio Naranjo, 1897, *Tonduz 15573* (G, NY, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**). GUANACASTE: Tilarán cantón, Arenal, ~500 m (Eggers 2001); Tilarán cantón, El Arenal, 485–600 m, 1926, *Standley & Valerio 45161a* (JE, S, **Herzog 1951** as *Odontolejeunea longispica*; **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); San Miguel de Sarapiquí, 850 m, 30 Jan 1985, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Rara Avis, *Dauphin 2177* (CR, **Dauphin 2005**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-43*, *91-44*, *91-45*, *91-46*, *91-47*, *91-48*, *91-49*, *91-50*, *92-59*, *92-63*, *92-64*, *92-214* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Talamanca cantón, Bordes del Río Yorquín, 1894, *Pittier 8528* (JE, **Herzog 1951** as *Odontolejeunea longispica*; **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Las Cruces, Jardín Botánico Wilson, *Dauphin 1714* (CR, **Dauphin 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Quepos cantón, Quebrada Tocori, *Tonduz 3077b* (BM, G, **Stephani 1896** as *Odontolejeunea tocoriensis*; **Teeuwen 1989**; **Morales 1991**); Quepos cantón, Quebrada Tocori, Mar 1893, *Tonduz 3077b* (G-00112858 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=141822&lang=en, BM, **TYPE** of *Odontolejeunea tocoriensis*, **Geissler and Bischler 1989** as *Odontolejeunea tocoriensis*; **Dauphin 2005**). SAN JOSÉ: Dota cantón, San Marcos, 1893, *Tonduz 15576* (G, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34220/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 661*, *662*, *etc.* (PMA, **Sierra et al. 2019a**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Odontolejeunea lunulata (F.Weber) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

≡*Jungermannia lunulata* F.Weber, *Hist. Musc. Hepat. Prodr.*: 33, 1815 (Weber 1815). Type: Patria ignota.

=*Phragmicoma calcarata* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 259, 1843 (Montagne 1843), syn. fide Teeuwen (1989). Type: Surinam.

≡*Odontolejeunea calcarata* (Mont.) Steph., *Sp. Hepat. (Stephani)* 5: 177, 1912 (Stephani 1912a).

=*Lejeunea sieberiana* Gottsche, *Syn. Hepat.* 3: 328, 1845 (Gottsche et al. 1845a), syn. fide Vanden Berghen (1952). Type: Mauritius.

≡*Odontolejeunea sieberiana* (Gottsche) Schiffn., *Hepat. (Engl.-Prantl)*: 128, 1893 (Schiffner 1893a).

GUATEMALA. S. loc. (Lücking 1995; Bastos 2004). ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); between Senahu and Actala, 1905, *Maxon & Hay 3322a* (YU, **Teeuwen 1989**); Cobán municipio, Cubilquits, 350 m, 1906, *Türckheim 5067* (G, NY, **Teeuwen 1989**; **Gradstein 1994**; **Freire 2006**); Cobán, Las Victorias National Park, 1,100–1,300 m, 2002 (**Andersohn 2004**); Tactic, 1939, *Standley 69994* (NY, US, **Teeuwen 1989**; **Gradstein 1994**; **Freire 2006**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 390* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 146*, *157*, *309*, *459*, *470* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). CHIMALTENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). CHIQUIMULA: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). HUEHUETENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Nentón municipio, La Bendición de Dios, Montaña La Virgen, 16°01′18″N, 91°32′21″W, *Pérez 1691* (USCG, Pérez 2009). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). SAN MARCOS: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Camp 1, 16°22′59″N, 89°07′17″W, 11 Feb 1997, *Allen 18568*, det. Dauphin Jun 2017 (MO-5228023! https://www.tropicos.org/specimen/90102222, **this publication**).

HONDURAS. S. loc. (Lücking 1995; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54835* (**Herzog 1951**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela, 20–600 m, *Standley 55586* (S, US, **Teeuwen 1989**; **Gradstein 1994**). COMAYAGUA: Siguatepeque, *Morton 7580* (US, **Gradstein 1994**). CORTÉS: N of Lake Yojoa, *Morton 7884* (US, **Gradstein 1994**); San Francisco de Yojoa municipio, along Rio Lindo, N of Lake Yojoa, 500–600 m, 9–12 Apr 1951, *Morton 7879b* (US, **Gradstein 1994**).

EL SALVADOR. S. loc. (Lücking 1995). SAN VICENTE: San Vicente, *Winkler C/2* (**Winkler 1967** as *Odontolejeunea sieberiana*). SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/12/2*, *A/13/1*, *A/14/1*, *etc.* (**Winkler 1967**).

***NICARAGUA.** *MATAGALPA: La Dalia municipio, Macizos de Peñas Blancas, vicinity of Finca El Cielo, 13°15′N, 85°85.41′W, 13–18 Jan 1979, *Stevens 11698*, det. Dauphin May 2017 (MO-6236072! https://www.tropicos.org/specimen/100366248, **this publication**).

COSTA RICA. S. loc. (Stephani 1913 as *Odontolejeunea calcarata*; Cole 1982, 1983; Fulford 1987 as *Odontolejeunea sieberiana*; Bastos 2004); S. loc., 22–24 Sep 2000, *Piippo* (H, **Ahonen 2004, 2006**; **Feldberg et al. 2014**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Poás, 1,950 m, *Eggers* (hb. Eggers, **Eggers 2001**). CARTAGO: Jiménez cantón, Rio Naranjo, 1897, *Tonduz 15573* (G, NY, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Orosi, Tapantí National Park, 1,000–1,500 m, *Griffin & Eakin 321b* (U, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Santiago, 1,050 m, *Maxon 99* (NY, YU, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Esmeralda, 2,100, *Pittier 6003* (**Stephani 1893c** as *Odontolejeunea sieberiana*; **Morales 1991**; **Dauphin 2005**); Turrialba cantón, Esmeralda, 2,000 m, 1890, *Tonduz* (G, **Teeuwen 1989**); Turrialba cantón, Guayabo, 1,100 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Caribbean slope N of Tenorio, 500 m, 3 Feb 1985, *Eggers CR 3/49* (**Eggers et al. 2001**); Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**); Tilarán cantón, Cordillera Tilarán, *Eggers 47* (U, **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Tilarán cantón, Cordillera Tilarán, *Eggers 5* (U, **Morales 1991**; **Dauphin 2005**). HEREDIA: Heredia cantón, Vara Blanca, 1,380 m, *Eggers* (hb. Eggers, **Eggers 2001**); Rancho Flores forest, *Pittier 6041 p.p.* (**Stephani 1893c** as *Odontolejeunea sieberiana*; **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Caricias, ~2,000 m (Eggers 2001); San Isidro cantón, Cerro de Caricias, *Standley & Valerio 51988* (**Morales 1991**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51988 p.p.* (JE-04002124, **Herzog 1951**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49802 p.p.* (**Herzog 1951**); San Isidro cantón, Yerba Buena, 200 m, 1926, *Standley & Valerio 49802* (JE, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Sarapiquí cantón, Puerto Viejo, Laguna Hule, *Dauphin & Gonzáles 2143* (CR, **Dauphin 2005**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-3*, *91-117*, *91-130*, *etc.* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001**); Shiroles, 100 m, 1895, *Tonduz 15502* (G, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**); Siquirres cantón, Cairo, *Standley & Valerio 48676* (JE, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Buenos Aires cantón, Boruca (Dauphin 2005); Buenos Aires cantón, Boruca, *Tonduz 15507* (G, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Buenos Aires cantón, Cobagra, 1892, *Tonduz 15567* (G, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Cordillera de Tilarán, 1985, *Eggers CR 5/47* (U, **Teeuwen 1989**); Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,600 m, *Eggers* (hb. Eggers, **Eggers 2001**); Monteverde, 15 Jan 1965, *James, W. 40a* (R, **Reed and Robinson 1971**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Général (**Tonduz 1896** as *Odontolejeunea sieberiana*); Pérez Zeledón cantón, El General forest, 2,000–2,400 m, *Pittier 6054 p.p.* (**Stephani 1893c** as *Odontolejeunea sieberiana*; **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001**).

PANAMA. S. loc. (Lücking 1995). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Gudiño 3364*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,880 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30988* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34463*, *34488*, *34519/B* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,680 m, *Schäfer-Verwimp & Verwimp 34444* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34640/A* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34532/C*, *34569*, *34575/A* (JE, **Schäfer-Verwimp 2014**); Tierras

Altas distrito, Parque Internacional La Amistad, Las Nubes, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 30754*, *34735/B* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34138/C* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34262/C* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35W, 700 m, 10 Jan 2014, *Sierra & López 661*, *662*, *etc.* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, *Salazar Allen & Gradstein 9284* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: Capira distrito, Altos de Campana National Park, 850 m, *Salazar Allen & Gradstein 9254* (PMA, **Stotler et al. 1998**). ?PANAMA: S. loc. (Schäfer-Verwimp 2014). Note: We are not aware of any firsthand report from Panama Province and think it refers to Panama West.

COCOS I. S. loc. (Dauphin 1995, 1999); S. loc., *Pittier* (G-00047702 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=159230&lang=en, **Evans 1904** as *Odontolejeunea sieberiana*); Bahía Yglesias, 0–20 m, Apr 1992, *Lücking 458*, *468*, *470*, *645* (ULM, USJ, **Bernecker-Lücking 2000**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, Jun 2016, *Sanchez 2756*, det. Dauphin 2016 (CR!, **this publication**); Colnett, 200–250 m, Apr 1992, *Lücking 453* (USJ, **Bernecker-Lücking 2000**); Cuenca de la Quebrada Pittier, rumbo a Bahía Yglesias, 5°31′81.5″N, 87°03′32.3″W, 285 m, 29 Nov 2013, *Estrada et al. 6164*, det. G. Dauphin Jun 2021 (CR-4468354!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 534* (hb. Bernecker, **Bernecker-Lücking 2000**); Sendero hacia Cerro Yglesias, sobre ladera hacia Valle de los Piratas, cuenca del Río Minuto, 5°31′56.9″N, 87°03′28.3″W, 251 m, 27 Nov 2013, *Estrada 6145*, det. G. Dauphin Apr 2021 (CR-4468349!, **this publication**); Yglesias A, 50–100 m, Apr 1992, *Lücking 560* (USJ, **Bernecker-Lücking 2000**); Yglesias C, 250–350 m, Apr 1992, *Lücking 576*, *578* (USJ, **Bernecker-Lücking 2000**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Odontolejeunea rhomalea (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 176, 1912 (Stephani 1912a).

≡*Lejeunea rhomalea* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 147, 1884 (Spruce 1884). Type: Ecuador.

GUATEMALA. S. loc. (Lücking 1995). ALTA VERAPAZ: Cobán municipio, Cubilquitz, 350 m, 1906, *Türckheim 5060*, *5063*, *5066* (BM, G, NY, **Teeuwen 1989**; **Gradstein 1994**); Cobán, 1,550 m, 1906, *Türckheim 5080* (G, **Teeuwen 1989**; **Gradstein 1994**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. CARTAGO: Jiménez cantón, Río Naranjo, *Tonduz 3075 p.p.*, *3082 p.p.*, *15504*, *15605* (G, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). HEREDIA: Sarapiquí cantón, Puerto Viejo, *Biolley 15583* (G, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-35*, *92-10*, *92-40*, *92-41*, *92-42*, *92-43*, *92-44*, *94-14*, *94-33* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, 10°12′N, 83°55′W, 480 m, Mar 1991–Jun 1992, *Lücking 92-211* (CR, **Lücking 1995**; **Dauphin 2005**); Shiroles, 100 m, 1895, *Tonduz 15581* (NY, G, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Talamanca cantón, Tsaki, 200 m, *Tonduz 6032*, *6230*, *6231*, *15542* (G, **Teeuwen 1989**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Boruca, *Tonduz 15505*, *15506* (G, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Santo Domingo de Golfo Dulce, 1896, *Tonduz 15564*, *15579*, *15604* (G, NY, S, YU, **Teeuwen 1989**; **Morales 1991**; **Dauphin 2005**).

Also reported from Mexico, Northern South America, Western South America, Brazil.

Odontoschisma (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

Odontoschisma bifidum (Fulford) Gradst., Aranda et Vanderp., *Phytotaxa* 162(4): 232, 2014 (Gradstein et al. 2014).

≡*Cladomastigum bifidum* Fulford, *Acta Bot. Venez.* 2(5/8): 80, 1967 (Fulford 1967). Type: Venezuela.

≡*Iwatsukia bifida* (Fulford) R.M.Schust., *Bull. Nat. Sci. Mus. Tokyo* 11(1): 314, 1968 (Schuster 1968b).

***HONDURAS.** *OLANCHO: Catacamas municipio, Sierra de Algalta, Montaña Babilonia Ridge camp, 15 km NNW of Catacamas, 14°59′N, 85°56′W, 1,910 m, 1 Jun 1992, *Allen 12689B*, det. Dauphin May 2017 (MO-5922024! http://tropicos.org/specimen/90229650, **this publication**).

COSTA RICA. S. loc. (Costa 2017; Costa et al. 2020). SAN JOSÉ: S. loc. (Gradstein and Ilkiu-Borges 2015); Moravia cantón, Braulio Carrillo National Park, road to Limón, 10°03′10.0″N, 84°00′20.0″W, 1,700 m, 13 Sep 2006, *Erzberger & Dauphin 11787*, det. G. Dauphin and M. I. Morales (B, USJ, **Dauphin and**

Erzberger 2010 as *Iwatsukia bifida*); Moravia cantón, Braulio Carrillo National Park, road to Limón, 10°03′10.0″N, 84°00′20.0″W, 1,700 m, 2 Dec 2009, *Dauphin 4184*, *4185*, det. Váňa (USJ, PRC, **Dauphin and Erzberger 2010** as *Iwatsukia bifida*).

Also reported from Northern South America, Brazil.

Odontoschisma jishibae (Steph.) L.Söderstr. et Váňa, *Phytotaxa* 112(1): 13, 2013 (Váňa et al. 2013b).

≡*Cephalozia jishibae* Steph., *Sp. Hepat. (Stephani)* 6: 437, 1924 (Stephani 1924). Type: Japan.

≡*Iwatsukia jishibae* (Steph.) N.Kitag., *J. Hattori Bot. Lab.* 28: 103, 1965 (Kitagawa 1965).

GUATEMALA. QUICHÉ: S. loc., *Pérez 2313* (USCG, Pérez 2009 as *Iwatsukia jishibae*).

COSTA RICA. S. loc. (Váňa and Piippo 1989 as *Iwatsukia jishibae*; Enroth 1991 as *Iwatsukia jishibae*; Konstantinova and Vasiljev 1994 as *Iwatsukia jishibae*; Schuster and Konstantinova 1996 as *Iwatsukia jishibae*; O'Shea et al. 2001 as *Iwatsukia jishibae*; Schuster 2002 as *Iwatsukia jishibae*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Iwatsukia jishibae*; Holz 2006 as *Iwatsukia jishibae*). ALAJUELA: Poás Volcano, 2,550 m, 31 Jul 1977, *Griffin & Araya 96*, det. Grolle (FLAS, USJ, PRC, JE, NY, Váňa **1980** as *Iwatsukia jishibae*; **Morales and Griffin 1983** as *Iwatsukia jishibae*; **Morales 1991** as *Iwatsukia jishibae*; **Dauphin 2005** as *Iwatsukia jishibae*; **Gradstein and Ilkiu-Borges 2015**). CARTAGO: S. loc., 2,700 m, *Holz CR 00-543* (H-3202307, **Konstantinova 2004** as *Iwatsukia jishibae*); Turrialba cantón, Villa Mills, CATIE Station Siberia, *Holz CR543* (EGR, GOET, NY, etc., **Gradstein and Ilkiu-Borges 2015**). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Iwatsukia jishibae*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Iwatsukia jishibae*).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Siberia, Russian Far East, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Northern South America.

Odontoschisma longiflorum (Taylor) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 419, 1877 (Trevisan 1877).

≡*Sphagnoecetis longiflora* Taylor, *London J. Bot.* 5: 281, 1846 (Taylor 1846b). Type: Jamaica.

?GUATEMALA. S. loc. (Fulford 1987). Note: We do not know of any firsthand report from Guatemala.

?BELIZE. S. loc. (Fulford 1987; Whittemore and Allen 1996). Note: We do not know of any firsthand report from Belize.

COSTA RICA. S. loc. (Cole 1982, 1983). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-19a* (US, **Reed and Robinson 1971**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: S. loc., *Schäfer-Verwimp & Verwimp 34382/B* (M, **Feldberg et al. 2016, 2017**); Gualaca distrito, Fortuna, *Costa et al. 3054* (RB, **Gradstein and Ilkiu-Borges 2015**). COLÓN: Colón distrito, Santa Rita Ridge, 5 mi (8 km) from highway, *Croat 13207*, det. Vána (MO, PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Odontoschisma sphagni (Dicks.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

≡*Jungermannia sphagni* Dicks., *Fasc. Pl. Crypt. Brit.* 1: 6, 1785 (Dickson 1785). Type: Britain.

=*Jungermannia prostrata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788), syn. fide Aranda et al. (2014). Type: Jamaica.

≡*Odontoschisma prostratum* (Sw.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 419, 1877 (Trevisan 1877).

=*Sphagnoecetis stolonifera* Lindenb. et Gottsche, *Syn. Hepat.* 5: 688, 1847 (Gottsche et al. 1847), syn. fide Gradstein and Ilkiu-Borges (2015). Type: Mexico.

≡*Odontoschisma stoloniferum* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 419, 1877 (Trevisan 1877).

GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Odontoschisma prostratum*; Schumacker and Váňa 1999 as *Odontoschisma prostratum*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Odontoschisma* '*postratum*').

?HONDURAS. S. loc. (Schumacker and Váňa 1999 as *Odontoschisma prostratum*). Note: We do not know of any firsthand report from Honduras.

COSTA RICA. S. loc. (Schumacker and Váňa 1999 as *Odontoschisma prostratum*). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Cacao, Fila al Volcán Cacao, 10°55′43′N, 85°28′10′W, 1,100 m, *Dauphin 2478*, det. Dauphin (CR, **Dauphin 2005** as *Odontoschisma stoloniferum*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Northeast Tropical Africa(?), Southern Africa(?), Eastern Canada, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America.

Odontoschisma variabile (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 419, 1877 (Trevisan 1877).

≡*Sphagnoecetis variabilis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 688, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Odontoschisma falcifolium* Steph., *Bull. Herb. Boissier*, sér. 2, 8(8): 585 (=*Sp. Hepat. [Stephani]* 3: 369), 1908 (Stephani 1908b), syn. fide Gradstein (2013b). Type: Brazil.

=*Odontoschisma brasiliense* auct. Note: A SE Brazilian species rejected from the rest of South and Central America by Gradstein and Ilkiu-Borges (2015).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009). ALTA VERAPAZ: Cerro Chinajá, *Steyermark 45634* (F, **Fulford 1968**; **Freire 2006**; **Pérez 2009**). BAJA VERAPAZ: Purhulhá municipio, Civija, 4,100 ft (1,250 m), *Sharp 5177*, *5184*, *5185 p.p.* (TENN, **Fulford 1968**; **Freire 2006**; **Perez 2009**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Odontoschisma brasiliense*). *QUETZALTENANGO: Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 12 Dec 2004, *Quedensley 1482*, det. Dauphin Sep 2017 (MO, W-0089082!, **this publication**). QUICHÉ: Uspantán, 15°27′23.7″N, 90°47′58.9″W, 2,365 m, 2007, *Pérez et al. 2340* (USCG, Pérez 2009 as *Odontoschisma brasiliense*).

HONDURAS. S. loc. (Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009; Gradstein 2013b; Schäfer-Verwimp 2014). *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°37′N, 86°53′W, 23 Apr 1996, *Allen 17572*, det. Dauphin May 2017 (MO-6238549!, **this publication**); El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38′N, 86°51′W, 20 Apr 1996, *Allen 17375*, det. Dauphin May 2017 (MO-6236048!, **this publication**); El Porvenir municipio, Pico Bonito National Park, trail from confluence to ridge camps, 15°38′N, 86°51′W, 20 Apr 1996, *Allen 17496*, det. Dauphin May 2017 (MO-6236051!, **this publication**). COMAYAGUA: Siguatepeque, *Standley 56200* (S, **Gradstein and Ilkiu-Borges 2015**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, from Rio Cusuco to summit of Cerro Jilinco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 20 Mar 1993, *Allen 14308*, det. Dauphin May 2017 (MO-5227616!, **this publication**). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, 1,500 m, *Standley 683 p.p.*, *734 p.p.* (F, **Fulford 1968**); San Antonio de Oriente municipio, Cerro de Uyuca, 1,620–1,800 m, *Standley et al. 8023 p.p.* (F, **Fulford 1968**).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 2,100–2,400 m, 31 Jul 1977, *Croat 42457*, det. Dauphin May 2017 (MO-5228837! http://tropicos.org/specimen/100988150, **this publication**); Metapán municipio, Cerro Monte Cristo, ~14 mi NE of Metapán, trail to Punto Trifinio, 2,100–2,400 m, 31 Jul 1977, *Croat 42497*, det. Dauphin May 2017 (MO-5228836! http://tropicos.org/specimen/100988160, **this publication**).

COSTA RICA. LIMÓN: Talamanca cantón, Cerro Kámuk, *Davidse et al. 25993* (MO, U, **Gradstein and Ilkiu-Borges 2015**).

PANAMA. BOCAS DEL TORO: Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,420 m, *Schäfer-Verwimp & Verwimp 34382/B* (JE, **Schäfer-Verwimp 2014**). *COLÓN: Colón distrito, Santa Rita Ridge, 5 mi (8 km) from highway, 31 Jan 1971, det. Dauphin May 2017 (MO-5281098!, **this publication**).

Also reported from East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

***Otigoniolejeunea* (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).**

Otigoniolejeunea huctumalcensis (Lindenb. et Gottsche) Y.M.Wei, R.L.Zhu et Gradst., *Phytotaxa* 162(4): 237, 2014 (Wei et al. 2014).

≡*Lejeunea huctumalcensis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 762, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Pycnolejeunea dussiana* Steph., *Symb. Antill. (Urban)* 3: 278, 1902 (Stephani 1902d), syn. fide Reiner-Drehwald and Ilkiu-Borges (2007). Type: Guadeloupe.

≡*Ceratolejeunea dussiana* (Steph.) G.Dauphin, *Fl. Neotrop. Monogr.* 90: 54, 2003 (Dauphin 2003).

=*Ceratolejeunea dentatocornuta* Steph., *Sp. Hepat. (Stephani)* 5: 407, 1913 (Stephani 1913), syn. fide Dauphin (2003). Type: Ecuador.

=*Hygrolejeunea ocellata* Steph., *Sp. Hepat. (Stephani)* 5: 565, 1914 (Stephani 1914), syn. with *Ceratolejeunea dussiana* fide Dauphin (2005). Lectotype (Bonner 1966: 657) if not holotype: Ile Cocos, 1902, *Pittier s.n.*, hb. Cardot 83 (G-00047702 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=159230&lang=en).

≡*Pycnolejeunea cocosana* Mizut., *J. Hattori Bot. Lab.* 33: 253, 1970 (Mizutani 1970).

?GUATEMALA. ?CHIMALTENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Ceratolejeunea* cf. *dussiana*). ?CHIQUIMULA: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Ceratolejeunea* cf. *dussiana*). Note: We do not know of any positively identified specimen from Guatemala.

***NICARAGUA.** *ATLÁNTICO SUR: Nueva Guinea municipio, road from Rio Blanco to Rio Copalar, 12°52′30″N, 85°02′30″W, 200–400 m, 13 Feb 1979, *Stevens 12050 p.p.*, det. Dauphin May 2017 (MO-6699911! https://www.tropicos.org/specimen/100988666, **this publication**).

COSTA RICA. S. loc. (Bastos 2004 as *Ceratolejeunea dussiana*; Lavocat Bernard et al. 2009 as *Ceratolejeunea dussiana*); S. loc., *Pittier* (G, **Dauphin 2000**, **2003**, both as *Ceratolejeunea dussiana*). HEREDIA: Sarapiquí cantón, Finca el Plástico, Sendero el Tigre, *Dauphin 2174 p.p.* (GOET, **Dauphin 2005** as *Ceratolejeunea dussiana*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, near park entrance, 10°06.9′N, 83°58.4′W, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0283/A* (CR, JE, **Ellis et al. 2014a**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W),

3 Feb 2005 (**Sonnleitner et al. 2009** as *Ceratolejeunea dussiana*); Monteverde cantón, Reserva Biológica Monteverde, 1,550 m, *Gradstein 9419*, *9430*, *9464* (GOET, **Reiner-Drehwald and Ilkiu-Borges 2007** as *Lejeunea huctumalcensis*).

PANAMA. S. loc. (Bastos 2004 as *Ceratolejeunea dussiana*; Lavocat Bernard et al. 2009 as *Ceratolejeunea dussiana*; Fossatti et al. 2020). BOCAS DEL TORO: Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,640 m, *Schäfer-Verwimp & Verwimp 34417/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, *Reiner-Drehwald 960078*, *960099* (PMA, **Reiner-Drehwald and Ilkiu-Borges 2007** as *Lejeunea huctumalcensis*). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4490 p.p.* (PMA, **Dauphin et al. 2015**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998 as *Ceratolejeunea dentatocornuta*); Cerro Pirre, *Salazar Allen & Gradstein 9268* (GOET, **Dauphin 2000**, **2003**, both as *Ceratolejeunea dussiana*; **Dauphin et al. 2006** as *Ceratolejeunea dussiana*); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9279* (PMA, GOET, U, **Stotler et al. 1998** as *Ceratolejeunea dentatocornuta*; **Dauphin 2000**, **2003**, both as *Ceratolejeunea dussiana*; **Dauphin et al. 2006** as *Ceratolejeunea dussiana*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Ceratolejeunea dentatocornuta*).

COCOS I. S. loc. (Stephani 1914 as *Hygrolejeunea ocellata*; Clark 1953a as *Hygrolejeunea ocellata*; Fosberg and Klawe 1966 as *Hygrolejeunea ocellata*; Miller et al. 1983 as *Hygrolejeunea ocellata*; Geissler and Bischler 1989 as *Pycnolejeunea cocosana*; Dauphin 1995, 1999, both as *Hygrolejeunea ocellata*; Lavocat Bernard et al. 2009 as *Ceratolejeunea dussiana*; Schäfer-Verwimp and Reiner-Drehwald 2009 as *Lejeunea huctumalcensis*; Schäfer-Verwimp 2014; Schäfer-Verwimp and Van Melick 2016); S. loc., *Dauphin 999* (USJ, **Dauphin 2000**, **2003**, **2005**, all as *Ceratolejeunea dussiana*); S. loc., *Pittier 14071* (G, **Mizutani 1970** as *Pycnolejeunea cocosana*); S. loc., *Pittier* (G-00047702 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=159230&lang=en, **TYPE** of *Hygrolejeunea ocellata*, **He 1999** as *Pycnolejeunea cocosana*); S. loc., 50 m, 1902, *Pittier* (G [Steph. No. 5271], **Reiner-Drehwald and Ilkiu-Borges 2007** as *Lejeunea huctumalcensis*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Hygrolejeunea ocellata*); S. loc., 1994, *Dauphin A-4/17* (USJ, **Dauphin 2000**, **2003**, both as *Ceratolejeunea dussiana*); Cerro Pelón, 5°32′57″N, 87°03′56″W, 500 m, *Dauphin A-7*, det. G. Dauphin Apr 2021 (USJ-47533!, CR-4468411!, W!, **this publication**); Cuenca de la Quebrada Alfaro, rumbo a Bahía Yglesias, 5°31′8.4″N, 87°03′14.9″W, 266 m, *Estrada et al. 6169*, det. G. Dauphin Apr 2021 (CR-4468361!, **this publication**); El Gallinero, antes de mirador a Valle Wafer, 5°32′57″N, 87°03′56″W, 110 m, 25 Feb 1990, *Dauphin A-4/17*, det. G. Dauphin Apr 2021 (USJ-47630!, CR-4468424!, W!, **this publication**); Fila entre Bahía Wafer y Chatham, sendero hacia Cerro Yglesias, sobre ladera hacia Valle de los Piratas, Cuenca del Río Minuta, 5°32′56.9″N, 87°03′28.3″W, 251 m, *Estrada et al. 6142*, det. G. Dauphin May 2021 (CR-4468346!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 1011*, det. G. Dauphin Oct 2020 (CR-4468160!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 999*, det. G. Dauphin Jan 2021 (USJ-47189!, CR-4468422!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 550* (hb. Bernecker, Bernecker-Lücking 2000 as *Ceratolejeunea* cf. *dentatocornuta*); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 24 Jan 1994, *Dauphin 1011*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, Jun 2016, *Sanchez 2697*, det. Dauphin 2016 (CR!, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Otigoniolejeunea portoricensis (Hampe et Gottsche) Y.M.Wei, R.L.Zhu et Gradst., *Phytotaxa* 162(4): 237, 2014 (Wei et al. 2014).

≡*Lejeunea portoricensis* Hampe et Gottsche, *Linnaea* 25(3): 352, 1853 (Hampe and Gottsche 1852). Type: Puerto Rico.

≡*Physantholejeunea portoricensis* (Hampe et Gottsche) R.M.Schust., *Phytologia* 39(6): 429, 1978 (Schuster 1978b).

?COSTA RICA. S. loc. (Lavocat Bernard et al. 2009 as *Physantholejeunea portoricensis*). Note: We are not aware of any firsthand report from Costa Rica.

PANAMA. DARIÉN: Santa Fe distrito, Cerro Chucantí, Sendero del Helicóptero, desde letrero "Chucantí, Reserva Natural Privada" hacia la cima, 8°47′22″N, 78°27′17″W, 863 m, 21 Dec 2009, *Gudiño 841* (PMA, **Dauphin et al. 2015**).

†COCOS I. S. loc. (Schäfer-Verwimp and Reiner-Drehwald 2009 as *Physantholejeunea portoricensis*); S. loc., *Dauphin 943* (USJ, **Dauphin 1999** as *Physantholejeunea portoricensis*); Río Genio, 5°32′57″N, 87°03′56″W (Dauphin 2005 as *Physantholejeunea portoricensis*). Note: Dauphin (1999, 2005) are based on a misidentification of *Stictolejeunea balfourii*.

Also reported from the Caribbean, Brazil.

Pallavicinia Gray, *Nat. Arr. Brit. Pl.* 1: 775, 1824 (Gray 1821).

Pallavicinia lyellii (Hook.) Gray, *Nat. Arr. Brit. Pl.* 1: 775, 1821 (Gray 1821).

≡*Jungermannia lyellii* Hook., *Brit. Jungermann.*: tab. 77, 1816 (Hooker 1816b). Type: Britain.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 249* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez**

2006). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 2*, *3*, *130*, *163*, *188*, *375*, *397*, *411*, *412*, *443*, *476*, *488*, *497* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al.* (**Freire 2006**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Pallavicina*' *lyellii*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1398* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2306* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (Ştefănuţ 2003). CAYO: S. loc., Dec 1993, *Allen 15067* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15119* (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., Dec 1993, *Allen 15369* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15503* (BRH, MO, **Whittemore and Allen 1996**).

?HONDURAS. S. loc. (Ştefănuţ 2003). Note: We are not aware of any firsthand report from Honduras.

COSTA RICA. S. loc. (Cole 1984; Schäfer-Verwimp and Pócs 2009). ALAJUELA: Poás Volcano, 2 Aug 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**); San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110208* (UC, **Norris et al. 2017**). GUANACASTE: Liberia cantón, Rincón de La Vieja National Park, Las Pailas, 800–1,200 m, *Dauphin 1858* (CR, **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

PANAMA. DARIÉN: Summit of Pirre Massif, 1,200–1,350 m, *Allen 8863* (MO, **Stotler et al. 1998**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Eastern Canada, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Paracromastigum Fulford et J.Taylor, *Brittonia* 13(4): 336, 1961 (Fulford and Taylor 1961).

Paracromastigum granatense (Gottsche) R.M.Schust., *J. Hattori Bot. Lab.* 48: 341, 1980 (Schuster 1980c).

≡*Lepidozia granatensis* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 139, 1864 (Gottsche 1864). Type: Colombia.

≡*Bonneria granatensis* (Gottsche) Fulford et J.Taylor, *Brittonia* 13(4): 334, 1961 (Fulford and Taylor 1961).

=*Lepidozia granatensis* Gottsche f. *elatior* Steph., *Prim. Flor. Costaricensis*: 180, 1893 (Stephani 1893c), nom. inval. (ICN2018 Art. 38.1a; no description). Original material: Costa Rica, Alajuela, sommet du volcan de Poás, *Pittier 6020*.

COSTA RICA. S. loc. (Schuster 1963a as *Bonneria granatensis*; Fulford 1966 as *Bonneria granatensis*; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp et al. 2013; Gradstein 2021); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Poás National Park (Dauphin 2005); Poás Volcano, *Pittier 6017*, *6020* (**Stephani 1893c** as *Lepidozia granatensis* and its f. *elatior*; Fulford and Taylor 1961 as *Bonneria granatensis*; **Morales 1991** as *Bonneria granatensis*); S. loc., 1891–1896, *Durand & Pittier* (**Morales and Griffin 1983** as *Bonneria granatensis*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Gradstein 9726*, *9729* (USJ, **Gradstein et al. 1994**).

Also reported from Western South America.

Paracromastigum pachyrhizum (Nees) Fulford, *Mem. New York Bot. Gard.* 11(3): 390, 1968 (Fulford 1968).

≡*Jungermannia pachyrhiza* Nees, *Fl. Bras. (Martius)* 1(1): 339, 1833 (Nees 1833b). Type: Brazil.

=*Alobiella bifida* Steph., *Symb. Antill.* 2: 470, 1901 (Stephani 1901b), syn. fide Gradstein and Costa (2003). Type: Guadeloupe.

≡*Paracromastigum bifidum* (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 48: 341, 1980 (Schuster 1980d).

=*Leucosarmentum portoricense* Fulford, *Mem. New York Bot. Gard.* 11(3): 386, 1968 (Fulford 1968). Type: Puerto Rico.

≡*Paracromastigum portoricense* (Fulford) A.V.Freire, *Biodiv. Guatemala*: 64, 2006 (Freire 2006), nom. inval. (ICN2018 Art. 41.5; basionym not cited).

GUATEMALA. S. loc. (Gradstein et al. 1977 as *Leucosarmentum portoricense*; Schäfer-Verwimp and Pócs 2009 as *Paracromastigum bifidum*). ALTA VERAPAZ: Cobán municipio, N of Cobán, 4,400 ft (1,341 m), *Sharp 2972 p.p.*, *2973* (TENN, **Fulford 1968** as *Leucosarmentum portoricense*; **Freire 2006** as *Paracromastigum portoricense*; **Pérez 2009** as *Paracromastigum portoricense*).

PANAMA. DARIÉN: Pinogana distrito, 1.5 mi (2.4 km) along trail to Boca de Cupé from Cana, *Allen 8949*, det. Whittemore 1990 as Paracromastigum bifidum (MO!, **Stotler et al. 1998** as *Paracromastigum bifidum*); Pinogana distrito, Cana, at entrance to old Cana Mines, 4 May 1990, *Allen 8949*, det. Whittemore 1990 as *Paracromastigum bifidum* (MO-3678089!, **this publication**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 395* (PMA, **Dauphin 2007**). PANAMA: Panamá distrito, Altos de Cerro Azul, Sendero El Cantar, *Stotler & Crandall-Stotler 3500* (ABSH, PMA, **Stotler et al. 1998** as *Paracromastigum bifidum*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Pictolejeunea Grolle, *Feddes Repert.* 88(4): 248, 1977 (Grolle 1977a).

Pictolejeunea picta (Steph.) Grolle, *Feddes Repert.* 88(4): 252, 1977 (Grolle 1977a).

≡*Prionolejeunea picta* Steph., *Sp. Hepat. (Stephani)* 5: 223, 1913 (Stephani 1913). Type: Trinidad.

COSTA RICA. S. loc. (Gradstein et al. 2001b). LIMÓN: Pococí cantón, Llanuras de Tortuguero, *Dauphin et al. 1655* (CR, **Dauphin 2005**). PUNTARENAS: Osa cantón, Osa Peninsula, Corcovado National Park, Cerro Chocuaco, 500–600 m, *Quirós 29* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein et al. 2001b). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, from camping site of Rancho Mojado, 1,000 m, *Salazar Allen & Gradstein 9259 p.p.* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15139* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Pearson, 2003, *Dauphin 3105* (CR, PMA, **Dauphin et al. 2022**).

COCOS I. Río Chatham, 5°32′57″N, 87°03′56″W, 100 m, 15 Feb 1994, *Dauphin 1099* (USJ, CR, **Dauphin 1995**, **1999**, **2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochasma Lehm., *Nov. Stirp. Pug.* 4: 13, 1832 (Lehmann 1832).

Plagiochasma crenulatum Gottsche, *Mexik. Leverm.*: 266, 1863 (Gottsche 1863). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Cobán municipio, Gardens of La Posada, 1,350 m, *Richards & Williams 2791A* (F, NY, U, **Bischler 1979a** as *Plagiochasma wrightii*; **Bischler-Causse et al. 2005**; **Pérez 2009**); Senahú municipio, Finca Sepacuité, 900 m, *Maxon & Hay* (US, YU, **Bischler 1979a**). IZABAL: Along Rio Frio, 50–75 m, *Steyermark 41620* (F, **Bischler 1979a** as *Plagiochasma rupestre*; **Bischler-Causse et al. 2005**; **Pérez 2009**).

***BELIZE.** *CAYO: Las Cuevas Field Station, 16°44′N, 88°59′W, 10 Dec 1996, *Allen 18262A*, det. Brinda and Dauphin Jun 2017 (MO-5223977! http://tropicos.org/specimen/90094434, **this publication**); Monkey Tail Branch from Las Cuevas to the confluence with the Raspaculo Branch, 16°45′N, 88°56′W, 12 Dec 1996, *Allen 18305*, det. Brinda and Dauphin Jun 2017 (MO-5223976! https://tropicos.org/specimen/90094435, **this publication**). *TOLEDO: Edwards Road beyond Columbia, near Resemideres, 26 Feb 1948, *Gentle 6444*, det. Brinda and Dauphin Jun 2017 (MO-5228129! https://tropicos.org/specimen/90103088, **this publication**).

HONDURAS. S. loc. (Davison and Schotz 1998). COMAYAGUA: La Libertad municipio, Chichipates, Rio Yure, 22 Nov–31 Dec 1980, *Nelson et al. 6692*, det. Brinda Jun 2017 (MO-3678540!, **this publication**); Siguatepeque, 1,050 m, *Standley & Charon 6272* (F, **Bischler 1979a** as *Plagiochasma rupestre*; **Bischler-Causse et al. 2005**); Siguatepeque, *Yuncker et al. 6461* (hb. Fulford, **Bischler-Causse et al. 2005**).

?COSTA RICA. S. loc. (Dauphin 2005). Note: We are not aware of any firsthand report from Costa Rica.

Also reported from Southwestern USA, Southeastern USA, Mexico.

Plagiochasma cuneatum A.Evans, *Amer. J. Bot.* 19(7): 627, 1932 (Evans 1932). Type: USA.

GUATEMALA. S. loc. (Schuster 1992c). HUEHUETENANGO: Huehuetenango municipio, Zaculeu ruins, 1,740 m, *Volk 6/717* (PC, **Bischler 1979a**; **Bischler-Causse et al. 2005**).

Also reported from South-Central USA, Mexico, the Caribbean.

Plagiochasma intermedium Lindenb. et Gottsche, *Syn. Hepat.* 4: 513, 1846 (Gottsche et al. 1846). Type: Mexico.

≡*Aytonia intermedia* (Lindenb. et Gottsche) Kuntze, *Revis. Gen. Pl.* 1: 143, 1891 (Kuntze 1891).

GUATEMALA. S. loc. (Haynes et al. 1923; Haupt 1942; Hattori 1948, 1952, 1968b; Jovet-Ast 1965; Bapna and Kachroo 2000b; Chaudhary et al. 2006; Flores and Suárez 2015); S. loc., *Donnell Smith* (**Underwood 1895** as *Aytonia intermedia*); S. loc., *Friedrichstahl* (UC, W, **Bischler 1979a**). CHIMALTENANGO: Patzún municipio, along Rio Modeno, 5 km W of Patzun, 1,740 m, *Richards & Williams 3051* (F, **Bischler 1979a**; **Bischler-Causse et al. 2005**; **Pérez 2009**). ESCUINTLA: Below Las Lajas, 900–1,200 m, *Standley 64856* (F, NY, **Bischler 1979a**; **Bischler-Causse et al. 2005**; **Pérez 2009**). HUEHUETENANGO: Huehuetenango municipio, Zaculeu ruins, 1,740 m, *Volk 6/0718* (JE, **Bischler 1979a**; **Bischler-Causse et al. 2005**). SACATEPÉQUEZ: Antigua, ~25 mi W of Guatemala city, 7–23 Jul 1940, *Haupt* (**Haupt 1942**). SANTA ROSA: Cuajiniquilapa, 2,500 ft (762 m), Aug 1894, *Heyde & Lux 6292* (BM, F, FH, G, NY, YU, **Bischler 1979a**; **Evans 1915**; **Bischler-Causse et al. 2005**); Cuajinquilapa (**Schuster 1992c**); Guachipilín (Schuster 1992c); Guachipilín, 2,500 ft (762 m), Sep 1893, *Heyde & Lux 6292* (BM, F, FH, G, NY, US, MO-5379586, **Evans 1915**; **Bischler 1979a**; **Pérez 2009**); La Joya de Limón, E of Cuilapa, 900 m, *Standley 78282* (F, NY, **Bischler 1979a**; **Bischler-Causse et al. 2005**). SOLOLÁ: Panchel municipio, Hotel Regis at Panajachel, 1,500 m, *Richards & Williams 3018* (F, **Bischler 1979a**; **Bischler-Causse et al. 2005**; **Pérez 2009**). SUCHITEPÉQUEZ: Finca El Naranjo, *Svihla 45-6189* (hb. Fulford, **Bischler-Causse et al. 2005**; **Pérez 2009**).

COSTA RICA. S. loc. (Cole 1984; Schuster 1992c). CARTAGO: Oreamuno cantón, Río Reventado, N of Cartago, 1,460–1,650 m, *Standley & Valerio 49396* (NY, US, YU, **Bischler 1979a**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-394* (hb. Lücking, **Bischler-Causse et al. 2005**). SAN JOSÉ: Escazú cantón, Escazú mountains, 6,000 ft (1,829 m), 7 Aug 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**); San José

cantón, N bank of the Torres River between Bolívar Park and the Penitentiary, 27 Jul 1940, *Haupt* (**Haupt 1942**); vicinity of Las Pavas, 1,070 m, *Standley 36060* (YU, **Bischler 1979a**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from Southeastern USA, Mexico, Northern South America, Western South America, Southern South America.

Plagiochasma landii A.Evans, *Bull. Torrey Bot. Club* 42(5): 298, 1915 (Evans 1915). Type: Mexico.

GUATEMALA. S. loc. (Schuster 1992c; Stotler and Crandall-Stotler 2017). QUETZALTENANGO: Alonzo, San Juan Ostuncalco, *Standley 84178* (F, **Bischler-Causse et al. 2005**; **Pérez 2009**); San Juan Ostuncalco municipio, region of Los Alonzi, mountains above San Juan Ostuncalco, 2,700–2,800 m, *Standley 84170* (F, **Bischler 1979a** as *Plagiochasma rupestre*).

COSTA RICA. S. loc. (Schuster 1992c; Stotler and Crandall-Stotler 2017). CARTAGO: Oreamuno cantón, ravine N of Carit Sanatorium, Irazú, *Stork* (US, **Bischler 1979a** as *Plagiochasma rupestre*; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from South-Central USA, Mexico.

Plagiochasma rupestre (J.R.Forst. et G.Forst.) Steph. var. ***rupestre***, *Bull. Herb. Boissier* 6(10): 783 (=*Spec. Hep. [Stephani]* 1: 80), 1898 (Stephani 1898b).

≡*Aytonia rupestris* J.R.Forst. et G.Forst., *Char. gen. pl.*, ed. 2: 148, 1776 (Forster and Forster 1776). Type: Madeira.

GUATEMALA. S. loc. (Bischler 1979b; Miller et al. 1983); S. loc., *Volk 6/710* (P, **Bischler 1979a**). SACATEPÉQUEZ: Alotenango municipio, Las Lajas, 1,200 m, *Standley 58128* (F, NY, **Bischler 1979a**; **Bischler-Causse et al. 2005**; **Pérez 2009**). SOLOLÁ: Santiago de Atitlan municipio, Santiago de Atitlan, Zueban, *Degener* (W, **Bischler 1979a** as *Plagiochasma mexicanum*).

***NICARAGUA.** *JINOTEGA: Jinotega municipio, Cerro de La Cruz, middle E slope, 13°05′25″N, 86°00′40″W, 8 Feb 2010, *Stevens & Montiel 29550*, det. Brinda and Dauphin Jun 2017 (MO-5223976! https://tropicos.org/specimen/100256037, **this publication**).

COSTA RICA. S. loc. (Bischler 1979b; Miller et al. 1983; Ruklani and Rubasinghe 2022). ALAJUELA: San Ramón cantón, Finca Nectandra, 10°11′N, 84°31′W, 5 Jul 2007, *Norris 110367* (UC, **Norris et al. 2017**). CARTAGO: Cartago cantón, Taras, *Meléndez* (P [?=PC], **Bischler 1979a**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**). SAN JOSÉ: Entre San José y Heredia, 5 Jul 1941, *Svihla 41-452* (**Svihla 1942**; **Morales 1991**; **Dauphin 2005**); Santa Ana cantón, Rancho El Rodeo, 18 Jul 1941, *Svihla 41-506* (**Svihla 1942**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Bischler 1979a, 1979b; Miller et al. 1983). CHIRIQUÍ: Boquete distrito, on trail to Bajo Mono, 9 Sep 1940, *Svihla 40-414* (**Svihla 1942**; **Stotler et al. 1998**); Boquete, 2 Sep 1940, *Svihla 40-447* (**Bischler-Causse et al. 2005**); Boquete, 5 Sep 1940, *Svihla 41-404* (**Svihla 1942**; **Stotler et al. 1998**).

Also reported from Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe(?), North Africa, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Caucasus, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern USA, North-Central USA, Southwestern USA, South-Central USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

***Plagiochila* (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).**

Plagiochila abrupta Lehm. et Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 106, 1840 (Lindenberg 1840). Type: St. Vincent.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Northern South America.

Plagiochila adianthoides (Sw.) Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 77, 1840 (Lindenberg 1840).

≡*Jungermannia adianthoides* Sw., *Prodr. (Swartz)*: 142, 1788 (Swartz 1788). Type: Jamaica.

=*Plagiochila procera* Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 40, 1840 (Lindenberg 1840), syn. fide Heinrichs et al. (1998a). Type: Ecuador.

=*Plagiochila gibbosa* Lindenb. et Gottsche, *Linnaea* 20(3): 324, 1847 (Hampe 1847), syn. fide Heinrichs et al. (1998a). Lectotype: Venezuela.

=*Plagiochila angulifolia* Steph., *Bull. Herb. Boissier*, sér. 2, 5(4): 359 (=*Sp. Hepat. [Stephani]* 2: 527), 1905 (Stephani 1905e), syn. fide Heinrichs (2002). Lectotype (Bonner 1962b: 16): Costa Rica, San José, Santiago, 1,100 m, 22 Apr 1901, *Breuer*, ex hb. Mönkemeyer 11 (G).

=*Plagiochila esmeraldana* Steph., *Sp. Hepat.* 6: 146, 1918 (Stephani 1918), syn. fide Heinrichs et al. (1998b). Lectotype (Bonner 1962b: 100; see also Heinrichs et al. 1998b as "holotype"): Costa Rica, La Esmeralda, Nov 1892, *Biolley 15664*, ex hb. Cardot (G-00064075 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=125583&lang=en, isolectotypes NY-01113098, M).

=*Plagiochila secundidens* Steph. ex Dugas, *Thèse Fac. Sci. Paris*, ser. A, no. 1170: *Contrib. Étude* Plagiochila, 1928: 155, 188, 1928 (Dugas 1928), syn. fide Heinrichs (2002). Lectotype (Söderström et al. 2023a: 154): E viciniis urbis Guatemala, 1892, s. coll. (PC-0103036 https://science.mnhn.fr/institution/mnhn/collection/pc/item/pc0103036, isolectotype G-00115860 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=286225&lang=en).

=*Plagiochila gibbosa* f. *cellulis-magis-incrass* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 64, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Alto de La Estrella, province of Cartago, Mar 26, 27, 1924, *Standley 39052* (US-04627008 http://n2t.net/ark:/65665/3bb257dd1-a283-43de-bdc0-e2187f498be6).

GUATEMALA. S. loc. (**Bonner 1962b** as *Plagiochila secundidens*; **Geissler and Bischler 1989** as *Plagiochila secundidens*; Schuster 2021); S. loc., 1892 (G-26440, **Dugas 1928** as *Plagiochila secundidens*; **Heinrichs 2002**). ALTA VERAPAZ: Cobán

municipio, Cubilquita, 1,350 m, 1902, *Türckheim 8358* (US, **Heinrichs 2002**); Cobán, 1,600 m, *Türckheim 5580* (BM, FH, M, NY, **Heinrichs 2002**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 394* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Plagiochila* cf. *adiantoides*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). GUATEMALA: Guatemala City, 1892 (NY, **TYPE** of *Plagiochila secundidens*, Pérez 2009 as *Plagiochila angulifolia*). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez s. loc. 1682* (USCG, Pérez 2009).

BELIZE. S. loc. (Schuster 2021). TOLEDO: Columbia River Forest Reserve, 715 m, 1997, *Allen 19056* (GOET, **Heinrichs 2002**).

HONDURAS. S. loc. (Schuster 2021). COMAYAGUA: Siguatepeque municipio, El Achote, 1,850 m, 1936, *Yuncker et al. 6648* (NY, **Heinrichs 2002**).

COSTA RICA. S. loc., (500–)1,200–3,000 m (Pagán 1942b as *Plagiochila procera*; Fulford and Sharp 1990 as *Plagiochila procera*; **Holz et al. 2001**; Schuster 2021); S. loc., *Breuer* (**Stephani 1905e** as *Plagiochila procera*); S. loc., *Killip 18363* (**Carl 1931b** as *Plagiochila procera*); S. loc., *Tonduz* (**Stephani 1905e** as *Plagiochila procera*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Plagiochila* '*adiantoides*'; Holz 2003). ALAJUELA: S. loc., 1901, *Breuer 217* (G, **Heinrichs 2002**); Alajuela cantón, Viento Fresco (Dauphin 2005); Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47947a* (**Herzog 1938** as *Plagiochila angulifolia*; **Morales 1991** as *Plagiochila angulifolia*); Alajuela cantón, Viento Fresco, 1,600–1,900 m, 1926, *Standley & Torres 47809* (B, FH, M, US, **Heinrichs 2002**); Poás (Dauphin 2005); Poás Volcano, 2,700 m, 1977, *Griffin & Araya 34*, det. H. Inoue (USJ, FLAS, **Morales 1991** as *Plagiochila procera*; **Dauphin 2005**); Poás, 2,275 m, 1888, *Pittier 16* (G, **Heinrichs 2002**). CARTAGO: S. loc., 1,500 m, 1900, *Wercklé 6266* (G, M, **Carl 1931b** as *Plagiochila procera*; **Heinrichs 2002**); Alto de La Estrella (Dauphin 2005); Alto de La Estrella, *Standley 39052* (US, **Carl 1931b** as *Plagiochila gibbosa* f. *cellulis-magis-incrass*; **Herzog 1938** as *Plagiochila gibbosa* f. *cellulis-magis-incrass*; **Morales 1991** as *Plagiochila esmeraldana*; **Heinrichs 2002**); Jiménez cantón, Rio Naranjo (Dauphin 2005); Jiménez cantón, Rio Naranjo, 200–250 m, *Tonduz 3069* (G, **Heinrichs 2002**); Turrialba cantón, Esmeralda, Nov 1892, *Biolley 15664* (G-025198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=125583&lang=en, **TYPE** of *Plagiochila esmeraldana*, **Bonner 1962b** as *Plagiochila esmeraldana*; **Heinrichs et al. 1998b**). HEREDIA: Barva cantón, Barva Volcano, 1892, *Bielly 15664* (G, M, NY, **Stephani 1918** as *Plagiochila esmeraldana*; **Carl 1931b** as *Plagiochila gibbosa*; **Geissler and Bischler 1989** as *Plagiochila esmeraldana*; **Heinrichs 2002**); Barva cantón, Volcán Barva, 1,950 m (Dauphin 2005); Barva cantón, Volcán Barva, 2,800 m, *Valerio 3* (**Carl 1931b** as *Plagiochila gibbosa*; **Herzog 1938** as *Plagiochila gibbosa*; **Morales 1991** as *Plagiochila esmeraldana*); La Esmeralda (Dauphin 2005). LIMÓN: Chirripó (Dauphin 2005); Chirripó Grande, 2,500 m, 1932, *Kupper 1271b* (JE, M, **Heinrichs 2002**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Fila Pittier (Dauphin 2005); Coto Brus cantón, Parque Internacional La Amistad, Pittier, 1,900 m, 1995, *Dauphin 1368* (GOET, **Heinrichs 2002**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James 10* (US, **Heinrichs 2002**); Osa cantón, Península de Osa, 300 m (Dauphin 2005); Osa cantón, Rincón, trail to Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9321* (GOET, **Heinrichs 2002**). SAN JOSÉ: División, Monte Carmelo (Dauphin 2005); División, Monte Carmelo, 2,150 m, 1986, *Kappelle et al. 751* (US, **Heinrichs 2002**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, La Chonta (Dauphin 2005); Dota cantón, Laguna de La Chonta, 2,000–2,100 m, 1925, *Standley 42204* (US, **Carl 1931b** as *Plagiochila gibbosa*; **Heinrichs 2002**); Dota cantón, Laguna de La Chonta, NE of Sta María de Dota, 1,900 m, *Standley 47809*, *47820* (B, FH, M, US, **Carl 1931b** as *Plagiochila gibbosa*; **Herzog 1938** as *Plagiochila gibbosa*; **Morales 1991** as *Plagiochila esmeraldana*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Río Savegre valley, 2,300–2,700 m, 1999, *Heinrichs et al. 4159* (GOET, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs et al. 2000b**; **Heinrichs and Anton 2001**; **Heinrichs 2002**; **Dauphin 2005**); Dota cantón, San Gerardo, Río Savegre valley, 2300–2700, 1999, *Heinrichs et al. 4314* (GOET, **Heinrichs 2002**; **Groth and Heinrichs 2003**; **Groth et al. 2004a**; **Heinrichs et al. 2004d, 2005a, 2006b**; **Schäfer-Verwimp et al. 2006**; **Jamy et al. 2016**; **Patzak et al. 2016**; **Renner et al. 2017a**); Dota cantón, San Gerardo, Río Savegre valley, 2,300–2,700 m, 1999, *Heinrichs et al. 4315*, *4316* (GOET, **Heinrichs 2002**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41682* (US, **Carl 1931b** as *Plagiochila gibbosa*; **Herzog 1938** as *Plagiochila gibbosa*; **Morales 1991** as *Plagiochila esmeraldana*; **Kappelle 1996** as *Plagiochila esmeraldana*; **Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Dauphin 2005); Santiago, 1,100 m, 22 Apr 1901, *Breuer* (G, **TYPE** of *Plagiochila angulifolia*, **Stephani 1905e** as *Plagiochila angulifolia*; **Bonner 1962b** as *Plagiochila angulifolia*; **Geissler and Bischler 1989** as *Plagiochila angulifolia*; **Heinrichs 2002**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Plagiochila gibbosa*); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, trail to Quebrada Las Mellizas (**Salazar Allen et al. 2021**); Gualaca

distrito, Fortuna, *Spörle & Aranda 1.35*, *1.36* (PMA, **Spörle 1990** as *Plagiochila gibbosa*; **Stotler et al. 1998** as *Plagiochila gibbosa*); Gualaca distrito, Hornito, Fortuna, ~1,000 m, 20 May 1988, *Salazar Allen et al. 6201 p.p.* (U, **Heinrichs 2002**); Tierras Altas distrito, Cerro Punta, Las Cumbras, 1971, *Croat 13748* (MO, US, **Stotler et al. 1998** as *Plagiochila gibbosa*; **Heinrichs 2002**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9293* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA: Panamá distrito, along creek by road to Pacora, epiphyte, 800 m, *Spörle & Aranda* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, forest behind the INTEL tower, 900–1,000 m, *Spörle* (PMA, **Spörle 1990**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila aequatorialis Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 334, 1857 (Gottsche 1857). Type: America aequatorialis.

COSTA RICA. HEREDIA: Barva cantón, Bosques entre el Volcán Barva y Carrizal, *Pittier 6012* (G, **Stephani 1893c; Morales 1991; Dauphin 2005**). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 9 Apr 2000, *Holz CR 00-693* (CR, GOET, **Holz et al. 2001; Dauphin 2005**).

Also reported from Western South America.

Plagiochila aerea Taylor, *London J. Bot. 5*: 263, 1846 (Taylor 1846b). Type: Ecuador.

=*Plagiochila bursata* Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 88, 1840 (Lindenberg 1840), nom. illeg. (ICN2018 Art. 52.1; nom. superfl.). Type: "in carabais."

=*Plagiochila alpina* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 101, 1864 (Gottsche 1864), syn. fide Grolle and Heinrichs (1999). Lectotype: Venezuela.

=*Plagiochila bursata* f. *depauperata* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 67, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, Cerro de las Lajas, north of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51505* (US-04627055 http://n2t.net/ark:/65665/30cc6abf3-82de-494b-939a-0aedc2256b8b, JE); Costa Rica, Cerros de Zurquí, northeast of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50709* (US-04627056 http://n2t.net/ark:/65665/3a52bef74-e37c-4d48-b3ab-8d41e26f82f8, JE, M); same location, *Standley & Valerio 50299* (US-04627054 http://n2t.net/ark:/65665/34e92e297-2c48-40cc-8b42-a0b79772318e, JE, M).

=*Plagiochila bursata* var. *fissistipula* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 67, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, Heredia, Cerro de las Caricias, N of San Isidro, 11 Mar 1926, *Standley & Valerio 52150* (US-00289474 http://n2t.net/ark:/65665/3082bbb6b-2cf0-4e7e-8170-b110d6faf690, JE).

=*Plagiochila bursata* var. *pilistipula* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 67, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, La Hondura, province of San José, altitude 1,300 to 1,700 m, 2–4 Mar 1924, *Standley 36300* (US-04675708 http://n2t.net/ark:/65665/338668d00-ee81-47c9-b23b-3af64b75d695, JE); same location, 16 Mar 1924, *Standley 37811* (US-04627043 http://n2t.net/ark:/65665/39766537c-664a-45d1-a229-c4f4305d275a, JE); Cerro de las Caricias, north of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 52161* (US-04626933 http://n2t.net/ark:/65665/39578e3d5-167d-4192-a7a2-336e06f0c5e6, JE, M).

=*Plagiochila bursata* var. *fissistipula* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 16, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 39.1; no Latin description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, Heredia, Cerro de las Caricias, N of San Isidro, 11 Mar 1926, *Standley & Valerio 52150* (US-00289474 http://n2t.net/ark:/65665/3082bbb6b-2cf0-4e7e-8170-b110d6faf690, JE).

=*Plagiochila bursata* f. *intermedia* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 16, 1938 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, Cerro de Las Lajas, north of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51646* (US-04627053 http://n2t.net/ark:/65665/36416dbe9-30fd-4bb9-8538-1519dea26893, JE).

=*Plagiochila bursata* f. *pilistipula* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 16, 1938 (Herzog 1938), nom. inval. (ICN2018 Art. 30.1; no Latin description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica, La Hondura, province of San José, altitude 1,300 to 1,700 m, 2–4 Mar 1924, *Standley 36300* (US-04675708 http://n2t.net/ark:/65665/338668d00-ee81-47c9-b23b-3af64b75d695, JE); same location, 16 Mar 1924, *Standley 37811* (US-04627043 http://n2t.net/ark:/65665/39766537c-664a-45d1-a229-c4f4305d275a, JE).

=*Plagiochila bursata* f. *tenera* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 16, 1938 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999). Original material: Costa Rica: La Estrella, province of Cartago, 26–27 Mar 1924, *Standley 39460* (US-04675707 http://n2t.net/ark:/65665/3977c943f-6c69-4ef7-83f8-30fc929bf817); Cerro de Las Lajas, north of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51505* (US-04627055 http://n2t.net/ark:/65665/30cc6abf3-82de-494b-939a-0aedc2256b8b, JE); Cerros de Zurquí, northeast of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50299* (US-04627054 http://n2t.net/ark:/65665/34e92e297-2c48-40cc-8b42-a0b79772318e, JE); same location, 3 Mar 1926, *Standley & Valerio 50709* (US-04627056 http://n2t.net/ark:/65665/3a52bef74-e37c-4d48-b3ab-8d41e26f82f8, JE, M); Las Nubes, province of San José, altitude 1,500 to 1,900 m, 20–22 Mar 1924, *Standley 38479* (US-04627052 http://n2t.net/ark:/65665/3cfb6f2d1-936c-4e9b-92c8-cf4f86a6c3dc).

=*Plagiochila bursata* f. *amphigastriis-minimis-digitatis* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 16, 1938 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Grolle and Heinrichs (1999).

Original material: Costa Rica: La Palma, province of San José, altitude about 1,600 m, 17 Mar 1924, *Standley 38009* (US-04627044 http://n2t.net/ark:/65665/36b21be5a-a42d-421d-b38e-06c35e894f1c); same location, *Standley 38052* (US-04627051 http://n2t.net/ark:/65665/34fb1dd11-4ecb-4bf0-bae6-766675bb11b4).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim* (G in hb. Levier 5817, **Grolle and Heinrichs 1999**); Cobán, 1,350 m, 1887, *Türckheim* (G, **Heinrichs 2002**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 390*, *391* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila bursata*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). SACATEPÉQUEZ: Volcán de Agua, det. Inoue 1967 (NY, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** also as *Plagiochila* aff. *bursata*).

BELIZE. TOLEDO: S. loc., Dec 1993, *Allen 15321* (BRH, MO, **Whittemore and Allen 1996** as *Plagiochila bursata*).

HONDURAS. S. loc. (**Bonner 1962b** as *Plagiochila bursata* f. *tenera*). FRANCISCO MORAZÁN: San Antonio de Oriente municipio, Cerro de Uyuca, 1,650–2,000 m, *Morton 7181* (S, **Grolle and Heinrichs 1999**).

NICARAGUA. GRANADA: Granada municipio, Mombacho Volcano, 960 m, *Maxon 7794* (S, **Grolle and Heinrichs 1999**); Granada municipio, Volcán Mombacho, 1,000–1,220 m, 1981, *Heinrichs & Moreno 191* (U, **Heinrichs 2002**).

COSTA RICA. S. loc. (**Bonner 1962b**; Cole 1982, 1983, both as *Plagiochila bursata*; Fulford and Sharp 1990; Gradstein and Holz 2005); S. loc., *Heinrichs et al. 4143* (**Heinrichs et al. 2000b**); S. loc., *Heinrichs et al. 4157* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Dauphin 2005**); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (YU, G, S, **Hampe 1851b** as *Plagiochila bursata*; **Müller 1851** as *Plagiochila bursata*; **Polakowsky 1879** as *Plagiochila bursata*); S. loc., *Pittier* (G, **Stephani 1902a**); S. loc., *Standley 38616* (**Carl 1931b** as *Plagiochila bursata*); S. loc., 1,300–2,400 m, *Standley 52161* (JE, M, **Carl 1931b** as *Plagiochila bursata* var. *pilistipula*; **Grolle and Heinrichs 1999**); S. loc., *Standley 52205* (**Geissler and Bischler 1989** as *Plagiochila bursata* f. *depauperata*); S. loc., *Standley 52864* (**Carl 1931b** as *Plagiochila bursata* var. *fissistipula*); S. loc., *Standley 53161* (**Geissler and Bischler 1989** as *Plagiochila bursata* 'f. *pilistipula*'); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, along road from San Ramón to Bajo Rodriguez, at Río Cataratas, 27 Nov 1987, *Croat 68109*, det. Dauphin May 2017 (MO-52755911, **this publication**); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Norris 110322a* (UC-2054069, **Norris et al. 2017**). CARTAGO: La Estrella, *Standley 39460* (**Herzog 1938** as *Plagiochila bursata* f. *tenera*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *tenera*; **Morales 1991** as *Plagiochila bursata*); La Union cantón, Carpintera, *Pittier 6033* (**Stephani 1893c**; **Morales 1991**); La Union cantón, Carpintera, 1,500–1,850 m, *Standley 34436* (**Carl 1931b** as *Plagiochila bursata*; **Herzog 1938** as *Plagiochila bursata*; **Morales 1991** as *Plagiochila bursata*); Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Tapanti National Park, 1,400 m, 1999, *Heinrichs et al. 4322* (**Heinrichs 2002**). HEREDIA: Barva cantón, Volcán Barva, *Valerio 22* (**Carl 1931b** as *Plagiochila bursata*); San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro de Caricias, *Standley 51646* (**Herzog 1938** as *Plagiochila bursata* f. *intermedia*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *intermedia*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, 1926, *Standley 52150* (**Carl 1931b** as *Plagiochila bursata* var. *fissistipula*; **Herzog 1938** as *Plagiochila bursata* var. *fissistipula*; **Geissler and Bischler 1989** as *Plagiochila bursata* var. *fissistipula*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); San Isidro cantón, Cerro de las Caricias, N of San Isidro, 2,000–2,400 m, 1926, *Standley 52161* (JE, **Heinrichs 2002**); San Isidro cantón, Cerro de Las Lajas (Dauphin 2005); San Isidro cantón, Cerro de Las Lajas, *Standley 50777* (**Carl 1931b**; **Morales 1991**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51505* (**Carl 1931b** as *Plagiochila bursata* f. *depauperata*; **Herzog 1938** as *Plagiochila bursata* f. *tenera*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *tenera*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, *Standley 51619* (**Herzog 1938**; **Morales 1991**); San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50268*, *50339*, *50376*, *50519*, *50532* (**Carl 1931b**; **Herzog 1938** as *Plagiochila bursata*; **Morales 1991** as *Plagiochila bursata*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley 50299* (**Carl 1931b** as *Plagiochila bursata* f. *depauperata*; **Herzog 1938** as *Plagiochila bursata* f. *tenera*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *depauperata* and f. *tenera*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley 50445* (JE, **Carl 1931b**; **Herzog 1938**; **Morales 1991**; **Heinrichs 2002**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley 50709* (**Carl 1931b** as *Plagiochila bursata* f. *depauperata*; **Herzog 1938** as *Plagiochila bursata* f. *tenera*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *depauperata* and f. *tenera*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49744* (**Morales 1991**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Reed and Robinson 1971** as *Plagiochila bursata*); Monteverde cantón, forest road "El Camino," 1,500 m, 1998, *Arts CR 24/08*, *CR 24/16* (GOET, **Heinrichs 2002**); Monteverde cantón, Monteverde

Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Plagiochila bursata*); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-22* (R, **Reed and Robinson 1971** as *Plagiochila bursata*); Puntarenas cantón, Brillante, 25 Jul 1966, *James, W.* (R, **Reed and Robinson 1971** as *Plagiochila bursata*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Río Savegre valley, "Los Robles," 2,300 m, 1999, *Heinrichs et al. 4321* (GOET, **Heinrichs 2002**; **Groth and Heinrichs 2003**; **Groth et al. 2003, 2004a, 2004b**; **Heinrichs et al. 2003a, 2004a, 2004b, 2004c, 2004d, 2005a, 2005b, 2006a, 2006b**; **Lindner et al. 2004**; **Rycroft et al. 2004**; **Schäfer-Verwimp et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017a**); Moravia cantón, La Hondura (Dauphin 2005); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley & Valerio 51820*, *51834* (JE, **Grolle and Heinrichs 1999**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36480*, *51814*, *51820*, *51834* (**Carl 1931b** as *Plagiochila bursata*; **Herzog 1938** as *Plagiochila bursata*; **Morales 1991** as *Plagiochila bursata*); Moravia cantón, La Hondura, 1,300–1,700 m, 1924, *Standley 36300*, *37811* (**Carl 1931b** as *Plagiochila bursata* var. *pilistipula*; **Herzog 1938** as *Plagiochila bursata* f. *pilistipula*; **Bonner 1962b** as *Plagiochila bursata* f. *pilistipula* ["Honduras"]; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *pilistipula* and 'f. *pilistipula*'; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); Moravia cantón, La Hondura, 1,200–1,500 m, 1926, *Standley 51864* (**Herzog 1938** as *Plagiochila bursata* var. *fissistipula*; **Geissler and Bischler 1989** as *Plagiochila bursata* var. *fissistipula*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**); Moravia cantón, La Palma (Dauphin 2005); Moravia cantón, La Palma, *Pittier 6001* (**Stephani 1893c** as *Plagiochila bursata*; **Morales 1991** as *Plagiochila bursata*); Moravia cantón, La Palma, 1,550 m, *Pittier* (G-025380, **Grolle and Heinrichs 1999**); Moravia cantón, La Palma, 1,600 m, *Standley 38006* (**Herzog 1938** as *Plagiochila alpina*; **Morales 1991** as *Plagiochila alpina*); Moravia cantón, La Palma, 1,600 m, *Standley 38052* (**Herzog 1938** as *Plagiochila bursata* f. *amphigastriis-minimis-digitatis*; **Geissler and Bischler 1989** as *Plagiochila bursata* var. *fissistipula*; **Grolle and Heinrichs 1999** ["Honduras"]); Moravia cantón, La Palma, *Valerio 36* (**Morales 1991**); Vásquez de Coronado cantón, Las Nubes (Dauphin 2005); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 36616*, *38448* (**Carl 1931b** as *Plagiochila bursata*; **Herzog 1938** as *Plagiochila bursata*; **Morales 1991** as *Plagiochila bursata*); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38479* (**Herzog 1938** as *Plagiochila alpina* and *Plagiochila bursata* f. *tenera*; **Geissler and Bischler 1989** as *Plagiochila bursata* f. *tenera*; **Morales 1991** as *Plagiochila alpina* and *Plagiochila bursata*); Vásquez de Coronado cantón, Las Nubes, 1,600 m, 1924, *Standley 38009* (JE, **Herzog 1938** as *Plagiochila bursata* var. *fissistipula*; **Geissler and Bischler 1989** as *Plagiochila bursata* var. *fissistipula*; **Morales 1991** as *Plagiochila bursata*; **Grolle and Heinrichs 1999**; **Heinrichs 2002**).

PANAMA. S. loc. (Ramírez et al. 2010 as *Plagiochila bursata*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000–1,200 m, *Salazar Allen et al. 672* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna, *Spörle 1.30* (PMA, **Spörle 1990** as *Plagiochila bursata*). COCLÉ: S. loc., *Spellman et al. B114a* (**Stotler et al. 1998**). DARIÉN: Chepigana distrito, Cerro Sapo, 1,085 m, *Hammel 1185* (U, **Grolle and Heinrichs 1999**); Chepigana distrito, Cerro Sapo, 1,100 m, 1979, *Hammel 7248* (U, **Heinrichs 2002**). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, 850 m, *Salazar Allen et al. 9469* (U, **Grolle and Heinrichs 1999**). VERAGUAS: Las Minas distrito, 18 km W of Las Minas, cerro Alto Higo, 750 m, 1978, *Hammel 4277* (U, **Heinrichs 2002**).

COCOS I. S. loc. (**Bonner 1962b** as *Plagiochila bursata* var. *fissistipula*; Fosberg and Klawe 1966 as *Plagiochila bursata*; Dauphin 1995 as *Plagiochila bursata*, 1999 as *Plagiochila bursata*, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Plagiochila bursata*); Chatham Bay, 28 Jun 1932, *Howell 228 p.p.* (CAS, **Clark 1953a** as *Plagiochila bursata*); Wafer Bay, 28 Jun 1932, *Walton Clark 221 p.p.*, *230 p.p.* (CAS, **Clark 1953a** as *Plagiochila bursata*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila alternans Lindenb. et Gottsche, *Syn. Hepat.* 5: 648, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Plagiochila columbica* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 324, 1857 (Gottsche 1857), syn. fide Müller et al. (1999). Type: Venezuela.

=*Plagiochila grandifolia* Steph., *Sp. Hepat.* 6: 160, 1918 (Stephani 1918), syn. fide Herzog (1955b). Lectotype (Bonner 1962b: 127): Costa Rica, Cartago, 1,500 m, May 1900, *Wercklé s.n.*, hb. Levier 6267 (G-00061423 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127763&lang=en, isolectotypes JE-04007571 https://je.jacq.org/JE04007571, JE-040072 https://je.jacq.org/JE04007572, M).

COSTA RICA. S. loc., 1,400–2,900 m (Herrera 1921, 1926, 1941; **Holz et al. 2001**); S. loc., *Heinrichs et al. 4317* (**Heinrichs 2002**; **Groth et al. 2003**; **Heinrichs et al. 2003a, 2004d**; **Schäfer-Verwimp et al. 2006**); S. loc., *Hyde* (**Evans 1914b**); S. loc., *Standley 36608* (**Carl 1931b** as *Plagiochila columbica*); S. loc., *Wercklé* (**Carl 1931b** as *Plagiochila grandifolia*); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Alajuela cantón, Viento Fresco (Dauphin 2005); Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley & Torres 47780* (JE, M, NY, Müller et al. 1999); Alajuela cantón, Viento Fresco,

1,600–1,900 m, *Standley 47780* (**Carl 1931b** as *Plagiochila columbica*; **Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*). CARTAGO: S. loc., *Wercklé* (**Stephani 1918** as *Plagiochila grandifolia*; **Dauphin 2005**); S. loc., 1,500 m, May 1900, *Wercklé* (hb. Levier 6267 in hb. G, **TYPE** of *Plagiochila grandifolia*, **Bonner 1962b** as *Plagiochila grandifolia*; **Geissler and Bischler 1989** as *Plagiochila grandifolia*; **Morales 1991** as *Plagiochila grandifolia*); Turrialba cantón, 12 km SW, Finca La Palmira, *Maas 801*, det. Müller and Heinrichs (GOET, **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52029* (**Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*); San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50294* (JE, US, **Carl 1931b** as *Plagiochila columbica*; **Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*; **Müller et al. 1999**). PUNTARENAS: Coto Brus (Dauphin 2005); Monteverde cantón, Cordillera de Tilarán, Santa Elena, 1,600 m, *Eggers CR5/90* (JE, US, Müller et al. 1999). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43945* (**Carl 1931b** as *Plagiochila columbica*; **Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*); Dota cantón, Copey, Laguna de La Escuadra (Dauphin 2005); Dota cantón, Laguna de la Escuadra, NE de El Copey, 2,000–2,200 m, *Standley 41918* (US, JE, M, **Carl 1931b** as *Plagiochila columbica*; **Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*; **Kappelle 1996** as *Plagiochila columbica*; **Müller et al. 1999**); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,100 m, 30 Nov 1999, *Heinrichs et al. AHH-134* (GOET, **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes (Dauphin 2005); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38608* (**Herzog 1938** as *Plagiochila columbica*; **Morales 1991** as *Plagiochila columbica*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34601* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila ambigua Lindenb. et Hampe, *Linnaea* 24(6): 640, 1851 (Hampe 1851a). Type: Costa Rica.

COSTA RICA. S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted* (**Hampe 1851a; Polakowsky 1879; Stephani 1905f; Bonner 1962b; Geissler and Bischler 1989**).

Not found outside Central America.

Plagiochila amicta Steph., *Bull. Herb. Boissier*, sér. 2, 5(9): 895 (=*Sp. Hepat. [Stephani]* 2: 561), 1905 (Stephani 1905d). Type: Colombia.

=*Plagiochila subbiloba* Herzog, *Repert. Spec. Nov. Regni Veg.* 21(1/7): 25, 1925 (Herzog 1925b), syn. fide Heinrichs (2002). Type: Brazil.

COSTA RICA. S. loc., *Heinrichs et al. 4178* (GOET, **Heinrichs 2002; Groth et al. 2003; Heinrichs et al. 2003a, 2004d, 2005a; Schäfer-Verwimp et al. 2006; Patzak et al. 2016**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Plagiochila subbiloba*); Dota cantón, Chacón Holiday Camp (Dauphin 2005); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Río Savegre Valley, holiday camp Chacón, Los Robles y Sendero La Quebrada, 2,300 m, 28 Sep 1999, *Heinrichs et al. 4176* (CR, GOET, **Holz et al. 2001** as *Plagiochila subbiloba*; **Heinrichs 2002**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila angustisedens Steph., *Bull. Herb. Boissier*, sér. 2, 5(8): 743 (=*Sp. Hepat. [Stephani]* 2: 542), 1905 (Stephani 1905f). Type: Venezuela.

PANAMA. PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, *Spörle 5225* (PMA, **Spörle 1990** as *Plagiochila* '*angusticedens*'); Panamá distrito, Cerro Jefe, forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen & Chung 5225* (PMA, **Stotler et al. 1998**).

Also reported from Mexico(?), the Caribbean, Northern South America.

Plagiochila arcuata Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 94, 1840 (Lindenberg 1840). Type: St. Vincent.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

?HONDURAS. S. loc. (Ellis et al. 2022a). Note: We are not aware of any firsthand report from Central America.

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Plagiochila biapiculata Steph., *Bull. Herb. Boissier*, sér. 2, 5(9): 891 (=*Sp. Hepat.* 2: 557), 1905 (Stephani 1905d). Lectotype (Söderström et al. 2023a: 152) if not holotype: Costa Rica, *Pittier* (G-00064113 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=125096&lang=en).

COSTA RICA. S. loc., *Pittier & Durand* (G, **Stephani 1905d; Bonner 1962b; Geissler and Bischler 1989**).

Not found outside Central America.

Plagiochila bicornis Hampe et Gottsche, *Linnaea* 25(3): 338, 1853 (Hampe and Gottsche 1852). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de

Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from the Caribbean.

Plagiochila bicuspidata Gottsche, *Mexik. Leverm.*: 43, 1863 (Gottsche 1863). Lectotype: Mexico.

≡*Plagiochila cuneata* var. *bicuspidata* (Gottsche) Herzog, *Hedwigia* 74(2): 87, 1934 (Herzog 1934).

COSTA RICA. S. loc. (Váňa and Engel 2013; Gradstein and Benitez 2017; Gradstein 2021); S. loc., *Holz CR 99-787* (GOET, **Groth et al. 2004a**; **Heinrichs et al. 2005a**, **2006b**); S. loc., *Holz* (**Groth et al. 2002**, **2004b**; **Dauphin 2005**; **Heinrichs et al. 2006a**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). ALAJUELA: Alajuela cantón, Fraijanes, 1,500–1,700 m, *Standley 47469* (**Carl 1931b** as *Plagiochila cuneata* var. *bicuspidata*; **Herzog 1938** as *Plagiochila cuneata* var. *bicuspidata*). CARTAGO: La Estrella, *Standley 39174* (**Herzog 1938** as *Plagiochila cuneata* var. *bicuspidata*). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38379* (**Herzog 1938** as *Plagiochila cuneata* var. *bicuspidata*).

Also reported from Mexico, Northern South America, Western South America, Southern South America, Subantarctic Islands(?).

Plagiochila bifaria (Sw.) Lindenb. *Sp. Hepat. (Lindenberg) 5*: 127, 1843 (Lindenberg 1843) var. ***bifaria***.

≡*Jungermannia bifaria* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

=*Jungermannia compressula* Nees, *Enum. Pl. Crypt. Javae*: 75, 1830 (Nees 1830), syn. fide Heinrichs et al. (2004a). Type: Mexico.

≡*Plagiochila compressula* (Nees) Lindenb., *Sp. Hepat. (Lindenberg) 5*: 128, 1843 (Lindenberg 1843).

=*Plagiochila geniculata* Lindenb., *Sp. Hepat. (Lindenberg) 5*: 131, 1843 (Lindenberg 1843), syn. fide Gradstein (2015a). Type: Barbados.

=*Plagiochila implexa* Lindenb. et Gottsche, *Syn. Hepat. 5*: 651, 1847 (Gottsche et al. 1847), syn. fide Heinrichs et al. (1998b). Lectotype: Mexico.

=*Plagiochila exesa* Lindenb. et Gottsche, *Syn. Hepat. 5*: 629 (Gottsche et al. 1847), syn. fide Gradstein (2015a). Type: Mexico. Note: Reports from Panama were rejected as *Plagiochila eggersii* by Gradstein (2016).

=*Plagiochila spinifera* Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 30(5): 113, 1873 (Ångström 1873), syn. fide Gradstein (2015a). Lectotype: Galápagos.

=*Plagiochila pinnata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 485, 1885 (Spruce 1885), syn. fide Heinrichs et al. (1998b). Type: Ecuador.

=*Plagiochila arnelliana* Steph., *Bull. Herb. Boissier*, sér. 2, 2(10): 861 (=*Sp. Hepat. [Stephani]* 2: 230), 1902 (Stephani 1902a), syn. fide Gradstein (2021). Type: Ecuador.

=*Plagiochila implexa* f. *minor* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 54, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, *Standley 37827*. Note: No original material seen. It is possible that Carl's collector number is a mistake and should actually be 37825 and thus the same as in Herzog (1938).

=*Plagiochila implexa* f. *minor* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 12, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, La Hondura, province of San José, altitude 1,300 to 1,700 m, Mar 16, 1924, *Standley 37825* (US-04627174 http://n2t.net/ark:/65665/35a936d22-c5c6-4fc0-8552-cbcacfca8d9a).

=*Plagiochila jaramilloi* H.Rob., *Bryologist* 70(1): 48, 1967 (Robinson 1967), syn. fide Gradstein (2016). Type: Colombia.

=*Plagiochila panamensis* Inoue, *Bull. Natl. Sci. Mus. Tokyo, B* 15(3): 94, 1989 (Inoue 1989a), syn. fide Gradstein (2021). Holotype: Panama, Chiriquí, Fortuna, 1,150 m, on living tree in forest, *Spörle & Aranda 1.33* (TNS-179297 http://www.type.kahaku.go.jp/TypeDB/bryophyta/1171, isotype PMA).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. Cordillera de Talamanca (Holz 2003 as *Plagiochila jaramilloi*; **Holz and Gradstein 2005b** also as *Plagiochila jaramilloi*; Holz 2006); S. loc. (Gradstein 1999a as *Plagiochila jaramilloi*; Dauphin 2005 as *Plagiochila jaramilloi*; Gradstein and Holz 2005 also as *Plagiochila jaramilloi*; Mandl 2007). CARTAGO: Pococí cantón, La Georgina, *Griffin et al. 426* (FLAS, **Morales 1991** as *Plagiochila jaramilloi*; **Kappelle 1996** as *Plagiochila 'jaramillii'*; **Dauphin 2005** as *Plagiochila jaramilloi*). HEREDIA: San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50262* (**Carl 1931b** as *Plagiochila implexa*; **Herzog 1938** as *Plagiochila implexa*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, 2,000 m, *Heinrichs et al. 4394* (GOET, CR, **Heinrichs et al. 2004a**, **2004d**, **2005a**, **2005b**, **2006a**; **Lindner et al. 2004**; **Dauphin 2005**; **Davison et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017b**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Moravia cantón, Bajo de La Hondura, *Standley 37825* (**Morales 1991** as *Plagiochila implexa*; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37641* (**Carl 1931b** as *Plagiochila implexa*; **Herzog 1938** as *Plagiochila implexa*; **Morales 1991** as *Plagiochila implexa*; **Dauphin 2005**); Moravia cantón, La Hondura, *Standley 37825* (JE, **Herzog 1938** as *Plagiochila implexa* f. *minor*); Moravia cantón, La Hondura, *Standley 37827* (**Morales 1991** as *Plagiochila implexa*; **Dauphin**

2005); Moravia cantón, La Palma, *Valerio 36* (**Carl 1931b** as *Plagiochila arnelliana*; **Herzog 1938** as *Plagiochila arnelliana*); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,100 m, 30 Nov 1999, *Heinrichs et al. AHH-134* (GOET, **Holz et al. 2001**); Pérez Zeledón cantón, Chirripó National Park, Río Talari, 3,000 m, *Dauphin 1264* (USJ, **Gradstein et al. 1994** as *Plagiochila compressula*; **Kappelle 1996** as *Plagiochila compressula*; **Dauphin 2005**).

PANAMA. S. loc., 1906, *Hélion* (PC, **Dugas 1928** as *Plagiochila pinnata*). CHIRIQUÍ: Boquete distrito, WNW of Boquete, Chiriquí volcano, 1,900–2,000 m, *Davidse & D'Arcy 10160G* (GOET, U, **Heinrichs et al. 2004a**); Gualaca distrito, Fortuna (Stotler et al. 1998 as *Plagiochila panamensis*); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,150 m, *Spörle & Aranda 1.33* (TNS-179297 http://www.type.kahaku.go.jp/TypeDB/bryophyta/1171, PMA, **TYPE** of *Plagiochila panamensis*, **Inoue 1989a** as *Plagiochila panamensis*; **Stotler et al. 1998** as *Plagiochila panamensis*; **Crosby and Engel 2006** as *Plagiochila panamensis*; Gradstein 2021 as *Plagiochila panamensis*); Gualaca distrito, Fortuna, *Spörle 1.33* (PMA, **Spörle 1990** as *Plagiochila panamensis*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,370 m, *Schäfer-Verwimp & Verwimp 34358* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). †DARIÉN: Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9239* (GOET, PMA, U, **Stotler et al. 1998** as *Plagiochila exesa*) Note: The report from Darién is rejected as *Plagiochila eggersii* by Gradstein (2016). PANAMA WEST: Capira distrito, Campana National Park, 800 m, *Salazar Allen et al. 6430*, *6431a*, *6431b* (PMA, **Stotler et al. 1998** as *Plagiochila spinifera*). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998 as *Plagiochila geniculata* and *Plagiochila spinifera*); Panamá distrito, Cerro Jefe, *Salazar Allen & Chung 5215* (PMA, **Stotler et al. 1998** as *Plagiochila geniculata*); Panamá distrito, Cerro Jefe, *Spörle* (PMA, **Spörle 1990** as *Plagiochila geniculata* and *Plagiochila spinifera*; **Stotler et al. 1998** as *Plagiochila geniculata* and *Plagiochila spinifera*); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Salazar Allen & Chung 5194a*, *5194b*, *5223* (PMA, **Stotler et al. 1998** as *Plagiochila geniculata*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Macaronesia, Western Indian Ocean, Indian subcontinent, Malesia Australia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila breuteliana Lindenb., *Sp. Hepat. (Lindenberg) 5*: 150, 1843 (Lindenberg 1843). Type: St. Kitts.

=*Plagiochila breuteliana* var. *γ novo-granatensis* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 110, 1864 (Gottsche 1864), syn. fide Heinrichs (2002). Type: Colombia.

=*Plagiochila ruficaulis* Steph., *Sp. Hepat.* 6: 205, 1921 (Stephani 1921), syn. fide Heinrichs (2002). Lectotype (Heinrichs 2002: 76): Costa Rica, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz 15640* (G-00113006 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=145969&lang=en, synlectotype G-00113005 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=145968&lang=en).

=*Plagiochila exalata* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 62, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs (2002). Original material: Costa Rica, Yerba Buena, NE of San Isidro, Prov. de Heredia, 2,000 m, on tree, *Standley & Valerio 49877* (JE-04001601 https://je.jacq.org/JE04001601, US-00073041 http://n2t.net/ark:/65665/3fae69d29-effa-44ab-8f09-ef3c301548ae), *Standley & Valerio 49826* (JE-04001602 https://je.jacq.org/JE04001602, US-00073040 http://n2t.net/ark:/65665/31be1a165-34f3-44bc-8598-cd02e03329ea); Costa Rica, Heredia, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 52164* (US-04627148 http://n2t.net/ark:/65665/3ae4cb7bb-072c-4f47-935b-a060d158bb85).

=*Plagiochila exalata* Herzog, *Hedwigia* 72(6): 200, 1932 (Herzog 1932), syn. fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 18): Costa Rica, Heredia, Yerba Buena (not "Cerro de Caricias" as stated in the protologue), NE of San Isidro, ~2,000 m, 1926, *Standley & Valerio 49877* (JE-04001601 https://je.jacq.org/JE04001601, US-00073041 http://n2t.net/ark:/65665/3fae69d29-effa-44ab-8f09-ef3c301548ae, B-13058, FH, PC).

=*Plagiochila exalata* Herzog f. *brevifolia* Herzog, *Hedwigia* 72(6): 200, 1932 (Herzog 1932), syn. fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 27): Costa Rica, Heredia, Yerba Buena (not "Cerro de las Caricias" as stated in the protologue), NE of San Isidro, ~2,000 m, 1926, *Standley & Valerio 49826* (JE-04001602 https://je.jacq.org/JE04001602, US-00073040 http://n2t.net/ark:/65665/31be1a165-34f3-44bc-8598-cd02e03329ea, FH).

COSTA RICA. S. loc. (Pagán 1939a, 1942b; Fulford 1987; Morales 1991; Dauphin 2005; Schäfer-Verwimp and Pócs 2009; Schuster 2021); S. loc., *Tonduz* (**Stephani 1905a, 1921** as *Plagiochila ruficaulis*; **Bonner 1962b** as *Plagiochila ruficaulis*; **Geissler and Bischler 1989** as *Plagiochila ruficaulis*). CARTAGO: Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz 15640* (G-00113006 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=145969&lang=en, **TYPE** of *Plagiochila ruficaulis*, **Heinrichs 2002**); Paraíso cantón, Tapantí National Park, Sendero Arboles Caídos, 1,300 m, 9 Oct 1999, *Heinrichs et al. 4271* (GOET, **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, *Standley 52164* (**Geissler and Bischler 1989** as *Plagiochila exalata*; **Morales 1991** as *Plagiochila exalata*; **Heinrichs 2002**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52164a* (hb. Herzog, **Carl 1931b** as *Plagiochila exalata*); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000–2,400 m, 22–28 Feb 1926, *Standley 49826* (JE-04001602 https://je.jacq.org/JE04001602, US, FH, **TYPE** of *Plagiochila exalata* f. *brevifolia*, **Carl 1931b** as *Plagiochila exalata*; **Herzog 1932, 1938**, both as *Plagiochila exalata* f. *brevifolia*; **Geissler and Bischler 1989** as *Plagiochila exalata* and its f. *brevifolia*; **Morales 1991** as *Plagiochila exalata*;

Heinrichs 2002; **Dauphin 2005**); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000–2,400 m, 22–28 Feb 1926, *Standley 49877* (JE-04001601, US-00073041, B-13058, FH, PC, **TYPE** of *Plagiochila exalata*, **Carl 1931b** as *Plagiochila exalata*; **Herzog 1932, 1938**, both as *Plagiochila exalata*; **Bonner 1962b** as *Plagiochila exalata*; **Geissler and Bischler 1989** as *Plagiochila exalata*; **Morales 1991** as *Plagiochila exalata*; **Heinrichs 2002**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, Checo Trail near Adono clearing, 3 Aug 1968, *James, W.* (US, R, **Holz et al. 2001**; **Heinrichs 2002**); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, *Gradstein 9552a* (GOET, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, Alto de Pito, San Marcos, *Tonduz 15641 p.p.* (G, **Heinrichs 2002**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Boquete distrito, Holcomb Trail, *Cornman 3064* (F, **Stotler et al. 1998**); Lawler's coffee tile, *Cornman 3084* (F, **Stotler et al. 1998**); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**). COCLÉ: La Pintada distrito, Cerro Tife, trail from Caño Sucio to the waterfall of the Rio Tife, 400–500 m, *Knapp 3759* (MO, NY, **Stotler et al. 1998**). NGÄBE-BUGLÉ COMARCA: Kankintú distrito, Rio Hacha, *Schlim* (G, **Bonner 1962b** as *Plagiochila breuteliana* var. *novo-granatensis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Southern South America.

Plagiochila canelensis Steph. *Bull. Herb. Boissier*, sér. 2, 5(10): 926 (=*Sp. Hepat. [Stephani]* 2: 576), 1905 (Stephani 1905c). Type: Ecuador.

=*Plagiochila subturgida* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 63, 1931 (Carl 1931b), syn. fide Heinrichs (2002), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Cartago, Vicinity of Pejivalle, 900 m, *Standley & Valerio 47126* (JE-04010812 https://je.jacq.org/JE04010812).

COSTA RICA. CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 47126* (JE, **Carl 1931b** as *Plagiochila subturgida*; **Geissler and Bischler 1989** as *Plagiochila subturgida*; **Morales 1991** as *Plagiochila subturgida*; **Heinrichs 2002**; **Dauphin 2005**).

Also reported from Western South America.

Plagiochila cleefii Inoue, *Stud. Cryptog. S. Peru*: 95, 1987 (Inoue 1987). Type: Peru.

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Northern South America, Western South America.

Plagiochila corrugata (Nees) Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 52, 1836 (Nees and Montagne 1836).

≡*Jungermannia corrugata* Nees, *Fl. Bras. (Martius)* 1(1): 378, 1833 (Nees 1833b). Type: Brazil.

=*Plagiochila crispula* Nees, *Syn. Hepat.* 1: 59, 1844 (Gottsche et al. 1844), syn. fide Stephani (1905d). TYPE: Brazil.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

PANAMA. S. loc. (**Mitten 1854b** as *Plagiochila crispula*).

Also reported from West Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila costariensis Horik., *Acta Phytotax. Geobot.* 13: 213, 1943 (Horikawa 1943), nom. nov. pro *Plagiochila pinnata* Steph., *Bull. Herb. Boissier*, sér. 2, 5: 749 (*Sp. Hepat. [Stephani]* 2: 548), 1905 (Stephani 1905f), hom. illeg. (ICN2018 Art. 53.1; non Spruce 1885). Lectotype (Söderström et al. 2023a: 154) if not holotype: Costa Rica, Alajuela, Montana de Poás, 2,400 m, 1888, *Pittier*, ex hb. Bescherelle (G-00061461 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126749&lang=en).

COSTA RICA. ALAJUELA: Poás, 2,400 m, 1888, *Pittier* (G, **TYPE** of *Plagiochila pinnata*, **Bonner 1962b** as *Plagiochila pinnata*). SAN JOSÉ: Montaña de Poás, *Pittier* (**Stephani 1905f** as *Plagiochila pinnata*; **Horikawa 1943**; **Geissler and Bischler 1989** also as *Plagiochila pinnata*).

PANAMA. S. loc., 1906, *Hélion* (PC, **Stotler et al. 1998**).

Not found outside Central America.

Plagiochila crispabilis Lindenb., *Sp. Hepat. (Lindenberg)* 1: 15, 1839 (Lindenberg 1839). Lectotype: Brazil.

=*Plagiochila patentissima* Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 64, 1840 (Lindenberg 1840), syn. fide Gradstein (2015a). Lectotype: Brazil.

=*Plagiochila jovoënsis* Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 87 (=*Sp. Hepat. [Stephani]* 2: 224), 1902 (Stephani 1902b), syn. fide Heinrichs et al. (2001c). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,000 m, *Pérez 317* (USCG, Pérez 2009 as *Plagiochila patentissima*); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Plagiochila* cf. *patentissima*).

COSTA RICA. CARTAGO: Alto de La Estrella, *Standley 39144* (**Herzog 1938** as *Plagiochila jovoënsis*; **Morales 1991** as *Plagiochila jovoënsis*; **Dauphin 2005** as *Plagiochila jovoënsis*). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

Also reported from Northeastern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila cristata (Sw.) Lindenb., *Spec. Hepat. (Lindenberg)* 1: 33, 1839 (Lindenberg 1839).

≡*Jungermannia cristata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

=*Plagiochila secundifolia* Lindenb. et Hampe, *Linnaea* 24: 302, 1851 (Hampe 1851b), syn. fide Stephani (1905e). Types: Costa Rica, 1845–1848, *Oersted 10336* (C); Costa Rica, 1,500–2,450 m, *Oersted s.n.* (BM).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc., up to 2,500 m (Pagán 1942b; Arnell 1956b; Fulford and Sharp 1990; **Holz et al. 2001**; Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp 2014; Schuster 2021); S. loc., *Endres* (**Stephani 1905e**); S. loc., *Oersted* (S-B58739, G-00282693, **Hampe 1851b** as *Plagiochila secundifolia*; **Polakowsky 1879** as *Plagiochila secundifolia*; **Stephani 1905e**; **Bonner 1962b** as *Plagiochila secundifolia*; **Heinrichs 2002**). CARTAGO: Alto de La Estrella (Dauphin 2005); Alto de La Estrella, *Standley 39050* (JE, **Bonner 1962b**; **Morales 1991**); El Guarco cantón, Cañón (Dauphin 2005); El Guarco cantón, Cañón, 2,200 m, 2000, *Holz CR 00-775* (**Heinrichs 2002**). HEREDIA: Barva cantón, Volcán Barva, 1,950 m (Dauphin 2005); Heredia cantón, Vertiente Atlántica del Volcán Barva, *Woodruff* (FLAS, **Morales 1991**); San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro Caricias, *Standley* (Haupt 1942); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52160* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**); San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50578* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**); San Isidro cantón, Cerro Zurquí, *Standley* (Haupt 1942); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 1926, *Standley 50645* (B, JE, M, NY, US, **Herzog 1938**; **Morales 1991**; **Heinrichs 2002**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, along South Line, 16 Mar 1969, *James, W. 1969-110* (R, **Reed and Robinson 1971**); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Reed and Robinson 1971**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 26*, *35* (R, **Reed and Robinson 1971**); Monteverde, 1,550 m, 1993, *Gradstein 9568*, *9599* (GOET, **Heinrichs 2002**). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942**); Braulio Carillo National Park, Zurquí, 1999, *Heinrichs et al. 4192* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Heinrichs 2002**; **Heinrichs et al. 2004d, 2005a, 2006b**; **Groth et al. 2004a**; **Dauphin 2005**; **Schäfer-Verwimp et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017a**); División, Monte Carmelo (Dauphin 2005); División, Monte Carmelo, 2,080 m, 1986, *Kappelle et al. 722* (U, **Heinrichs 2002**); Montes de Tablazo, Zurquí, 2,000–2,500 m, *Standley 48187* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**); Moravia cantón, Braulio Carrillo National Park, Sector Zurquí (Dauphin 2005); Moravia cantón, Cerro Zurquí, *Standley* (Haupt 1942); Moravia cantón, La Hondura, 1,300–1,700 m, 1924, *Standley 36212* (JE-04009193 https://je.jacq.org/JE04009193, US-00073025, **Morales 1991**); Moravia cantón, La Palma, 1,600 m, *Standley 38338* (JE, **Bonner 1962b**; **Morales 1991**).

PANAMA. S. loc. (Schuster 2021). CHIRIQUÍ: Boquete distrito, along road to summit of Volcán Barú, 8°48′N, 82°31′W, 2,260 m, 4 Apr 2006, *Schäfer-Verwimp & Verwimp 31025* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,150 m, 1988, *Spörle & Aranda PAN4059* (SAAR, **Heinrichs 2002**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,700 m, *Schäfer-Verwimp & Verwimp 34443* (JE, Schäfer-Verwimp 2014); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34564* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Subantarctic Islands.

Plagiochila cristata var. ***minor*** Herzog, *Rev. Bryol. Lichénol.* 11(1): 14, 1939 (Herzog 1938). Lectotype (Söderström and Hentschel 2023: 17): Costa Rica, Alto de la Estrella, prov. Cartago, on tree, *Standley 39050* (JE-04010983 https://je.jacq.org/JE04010983, isolectotype F-C0000334F ex US https://collections-botany.fieldmuseum.org/catalogue/58348).

Note: The identity of *Plagiochila cristata* var. *minor* is unclear, but it is not *Plagiochila cristata* (Heinrichs et al. 1998a).

COSTA RICA. CARTAGO: Alto de La Estrella, *Standley 39050* (JE, **Herzog 1938**; **Geissler and Bischler 1989**). SAN JOSÉ: Moravia cantón, La Palma, 1,600 m, *Standley 38338* (JE, **Herzog 1938**; **Geissler and Bischler 1989**).

Also reported from Western South America, Brazil(?).

Plagiochila cucullifolia J.B.Jack et Steph., *Hedwigia* 31(1): 24, 1892 (Jack and Stephani 1892) var. ***cucullifolia***. Lectotype: Colombia.

≡*Szweykowskia cucullifolia* (J.B.Jack et Steph.) Gradst. et M.E.Reiner, *Fragm. Florist. Geobot.* 40(1): 31, 1995 (Gradstein and Reiner-Drehwald 1995).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Szweykowskia cucullifolia*; Gradstein and Uribe 2016; Gradstein 2021; Schuster 2021); S. loc., *Heinrichs 4402* (GOET, **Patzak et al. 2016**); S. loc., *Heinrichs et al. 4202* (GOET, **Heinrichs 2002**); S. loc., *Heinrichs et al. 4402* (**Groth et al. 2003**; **Heinrichs et al. 2003a, 2004d, 2005a**; **Dauphin 2005**); Cordillera de

Talamanca (Engel and Gradstein 2003). CARTAGO: El Guarco cantón, 3 de Junio (Dauphin 2005); El Guarco cantón, 3 de Junio, 2,650 m, 15 Sep 1994, *Gradstein 9685* (U, USJ, **Gradstein and Reiner-Drehwald 1995** as *Szweykowskia cucullifolia*); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,600 m, 1994, *Gradstein & Mues 9685* (GOET, **Heinrichs et al. 2000b** as *Szweykowskia cucullifolia*, **2003a**; **Heinrichs 2002**; **Dauphin 2005**); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,600 m, 3 Oct 1999, *Heinrichs et al. 4156* (CR, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs 2002**; **Heinrichs et al. 2003a**); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,600 m, 2000, *Holz & Schäfer-Verwimp CR 00-104* (GOET, **Heinrichs 2002**; **Heinrichs et al. 2003a**); El Guarco cantón, Reserva de 3 de Junio, Pan-American Highway (km 67), 2,650 m, 14 Aug 1994, *Chacón* (GOET, **Gradstein and Reiner-Drehwald 1995** as *Szweykowskia cucullifolia*; **Heinrichs 2002**; **Heinrichs et al. 2003a**); Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Tapanti National Park, 2,200 m, 14 Jun 1986, *Arrocha* (GOET, **Gradstein and Reiner-Drehwald 1995** as *Szweyowskia cucullifolia*; **Heinrichs et al. 2001a** as *Szweykowskia cucullifolia*, **2003a**; **Heinrichs 2002**). HEREDIA: San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, *Standley 50533* (**Gradstein and Reiner-Drehwald 1995** as *Szweykowskia cucullifolia*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50553* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**). LIMÓN: Parque Internacional La Amistad Caribe, Fila Matama, *Herrera 2753* (CR, **Dauphin 2005**); Talamanca cantón, San José Cabécar, *Fernández 678* (CR, **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Valle del Silencio, 1,600–2,650 m, *Quesada 1198* (CR, **Dauphin 2005**).

PANAMA. S. loc. (Gradstein et al. 2001b as *Szweykowskia cucullifolia*; **Schuster 2021**). BOCAS DEL TORO: Almirante distrito, headwaters of Río Colubre, 2,400–2,550 m, 1984, *Gómez-Pignataro et al. 22420* (CR, MO, U, GOET, **Gradstein and Reiner-Drehwald 1995** as *Szweykowskia cucullifolia*; **Stotler et al. 1998** as *Szweykowskia cucullifolia*; **Heinrichs et al. 2001a** as *Szweykowskia cucullifolia*, **2003a**; **Heinrichs 2002**). CHIRIQUÍ: Tierras Altas distrito, Cerro Punta, 2,470 m, *van der Werff 6290* (MO, **Stotler et al. 1998** as *Szweykowskia cucullifolia*); Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3405* (ABSH, **Stotler et al. 1998** as *Szweykowskia cucullifolia*); Tierras Altas distrito, Parque Internacíonal La Amistad, Sendero Valle Libre, 1994, *Salazar Allen P123* (GOET, PMA, **Gradstein and Reiner-Drehwald 1995** as *Szweykowskia cucullifolia*; **Stotler et al. 1998** as *Szweykowskia cucullifolia*; **Heinrichs 2002**; **Heinrichs et al. 2003a**).

Also reported from Northern South America, Western South America.

Plagiochila deflexa Mont. and Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 6: 192, 1856 (Montagne 1856c). Lectotype: Hawaii.

=*Plagiochila subtrinitensis* Herzog, *Hedwigia* 72(6): 198, 1932 (Herzog 1932), syn. fide Heinrichs et al. (2002b). Lectotype (Heinrichs et al. 2002b: 105): Costa Rica, San José, La Palma, ~1,600 m, 1924, *Standley 38198* (JE-04010977 https://je.jacq.org/JE04010977, isolectotypes JE-04010975 https://je.jacq.org/JE04010975, B-13443, FH, PC, US).

HONDURAS. S. loc. (Schäfer-Verwimp and Pócs 2009). CORTÉS: Santa Cruz de Yojoa municipio, Agua Azul, Lake Yojoa, 600 m, 1951, *Morton 7205* (B, US, **Heinrichs et al. 2002b**).

NICARAGUA. S. loc. (Schäfer-Verwimp and Pócs 2009). RIVAS: Altagracia municipio, Isla Ometepe, Volcán Maderas, Balgüe, 1,000–1,260 m, 1984, *Nee & Robleto 28112* (U, **Heinrichs et al. 2002b**); Altagracia municipio, Isla Ometepe, Volcán Maderas, Balgüe, 1,200–1,260 m, 1984, *Robleto 492* (U, **Heinrichs et al. 2002b**).

COSTA RICA. S. loc. (Holz et al. 2001 as *Plagiochila subtrinitensis*; Gradstein and Holz 2005 as *Plagiochila subtrinitensis*; Schäfer-Verwimp and Pócs 2009; Schuster 2021); S. loc., *Heinrichs 4160* (**Heinrichs 2002**; **Heinrichs et al. 2006a**); S. loc., *Heinrichs et al.* (GOET, **Heinrichs et al. 2005a**, **2006a**; **Patzak et al. 2016**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Poás National Park (Dauphin 2005); Poás Volcano, 2,700 m, 1977, *Griffin & Araya 34*, det. H. Inoue (USJ, FLAS, **Heinrichs et al. 2002b**); San Ramón (Dauphin 2005). CARTAGO: Road Cartago–Cerro de la Muerte, Reserva Forestal de Río Macho, 2,500 m, 1993, *Gradstein & Morales 9382* (GOET, **Heinrichs et al. 2002b**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla (Dauphin 2005); Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W (Dauphin 2005); Liberia cantón, Guanacaste National Park, Volcán Cacao, 1,600 m, *Hammel 17647* (MO, **Heinrichs et al. 2002b**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva (Dauphin 2005); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 2,650–2,900 m, 1994, *Gradstein & Mues 5670/9637* (GOET, SAAR, **Heinrichs et al. 2002b**); San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50500* (**Herzog 1938** as *Plagiochila subtrinitensis*; **Bonner 1962b** as *Plagiochila subtrinitensis*; **Morales 1991** as *Plagiochila subtrinitensis*); San Isidro cantón, Cerro Zurquí, NE of San Isidro, 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50500* (B-13441, FH, JE, M, US, **Herzog 1932** as *Plagiochila subtrinitensis*; **Geissler and Bischler 1989** as *Plagiochila subtrinitensis*; **Heinrichs et al. 2002b**). LIMÓN: Chirripó Grande (Dauphin 2005); Chirripó Grande, 2,500 m, 1932, *Kupper 1271* (M, **Heinrichs et al. 2002b**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Plagiochila subtrinitensis*); Dota cantón, Finca La Cima (Dauphin 2005); Dota cantón, Finca La Cima, N de El Copey, 2,100–2,400 m, 21–22 Dec 1925, *Standley 42689* (FH, JE, US, **Herzog 1932**, **1938**, both as *Plagiochila subtrinitensis*; **Bonner 1962b** as *Plagiochila subtrinitensis*; **Geissler and Bischler 1989** as *Plagiochila subtrinitensis*; **Morales 1991** as *Plagiochila subtrinitensis*; **Kappelle 1996** as *Plagiochila subtrinitensis*; **Heinrichs et al. 2002b**); Dota cantón, Los Quetzales National Park

(Amengual et al. 2007 as *Plagiochila subtrinitensis*); Dota cantón, N de El Copey (Dauphin 2005); Dota cantón, Río Savegre, *Heinrichs et al. 4160* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001** as *Plagiochila subtrinitensis*; **Groth et al. 2002, 2003, 2004a, 2004b; Heinrichs 2002; Heinrichs et al. 2002b, 2003a, 2004a, 2004d, 2005a, 2005b, 2006b; Lindner et al. 2004; Rycroft et al. 2004; Dauphin 2005; Davison et al. 2006; Patzak et al. 2016; Renner et al. 2017a**); Dota cantón, Río Savegre, *Heinrichs et al. 4170* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001** as *Plagiochila subtrinitensis*; **Dauphin 2005**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Río Savegre valley, holiday camp Chacon, trail "Los Robles," 2,300 m, 1999, *Heinrichs et al. 4161* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001** as *Plagiochila subtrinitensis*; **Heinrichs et al. 2002b; Dauphin 2005**); Moravia cantón, La Palma (Dauphin 2005); Moravia cantón, La Palma, ~1,600 m, 24 Mar 1924, *Standley 38198* (JE, B-13443, FH, PC, US, **TYPE** of *Plagiochila subtrinitensis*, **Herzog 1932, 1938**, both as *Plagiochila subtrinitensis*; **Bonner 1962b** as *Plagiochila subtrinitensis*; **Geissler and Bischler 1989** as *Plagiochila subtrinitensis*; **Morales 1991** as *Plagiochila subtrinitensis*; **Heinrichs et al. 2002b**).

PANAMA. S. loc. (Schuster 2021). CHIRIQUÍ: Boquete distrito, Palo Alto NE of Boquete, 2,000 m, 1979, *Hammel 7517* (U, **Heinrichs et al. 2002b**); Boquete distrito, Palo Alto NE of Boquete, 2,000 m, 1979, *Hammel 7518* (U, **Heinrichs et al. 2002b**).

Also reported from Southeastern Pacific(?), Northeastern Pacific, Mexico, the Caribbean, Western South America.

Plagiochila deflexirama Taylor, *London J. Bot. 5*: 262, 1846 (Taylor 1846b). Type: Ecuador ("Peru").

=*Plagiochila bryopteroides* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 499, 1885 (Spruce 1885), syn. fide Gradstein (2015a). Type: Peru.

=*Plagiochila viridis* Steph., *Sp. Hepat.* 6: 239, 1921 (Stephani 1921), syn. fide Söderström and Hagborg (2023b). Lectotype (Bonner 1962b: 331) if not holotype: Guatemala, Alta Verapaz, Cobán, 1907, *Türckheim s.n.*, hb. Levier 5573 (G-00282940 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=222185&lang=en).

=*Plagiochila bryopteroides* var. *ecuadoriensis* Herzog, *Rev. Bryol. Lichénol.* 11(1): 13, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Morales (1991). Original material: Costa Rica: Zurquí, prov. S. José, 2,000–2,500 m, *Standley 48284/a* (F?, JE?).

≡*Plagiochila bryhnii* var. *ecuadoriensis* Herzog ex Bonner, *Index Hepat.* 1: 47, 1962 (Bonner 1962b), nom. inval. (ICN2018 Art. 38.1(a); no description, apparent error for *Plagiochila bryopteroides* var. *ecuadoriensis*).

GUATEMALA. ALTA VERAPAZ: Cobán, 1907, *Türckheim 5573* (G-00282940 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=222185&lang=en, **TYPE** of *Plagiochila viridis*, **Stephani 1921** as *Plagiochila viridis*; **Bonner 1962b** as *Plagiochila viridis*; **Geissler and Bischler 1989** as *Plagiochila viridis*); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 174* (USCG, Pérez 2009 as *Plagiochila* '*bryopterioides*'); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Plagiochila* cf. '*bryopterioides*'). QUICHÉ: S. loc., *Pérez 2220* (USCG, Pérez 2009 as *Plagiochila* '*bryopterioides*').

COSTA RICA. S. loc. (Schäfer-Verwimp 2014); S. loc., *Heinrichs 11* (GOET, **Heinrichs et al. 2004c, 2005a, 2006b; Jamy et al. 2016; Patzak et al. 2016; Renner et al. 2017a**); S. loc., *Heinrichs 4163* (GOET, **Heinrichs et al. 2000b, 2002a; Heinrichs 2002**); S. loc., *Heinrichs 4165* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**); S. loc., *Heinrichs et al. 11* (GOET, **Groth et al. 2004a**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 693* (CR, **Kappelle 1996** as *Plagiochila bryopteroides*). CARTAGO: El Guarco cantón, Cañón, Refugio Génesis II, 2,200 m, 22 Jun 2000, *Holz CR 00-776* (CR, GOET, **Holz et al. 2001; Dauphin 2005**). HEREDIA: Rancho Flores forest, *Pittier 6076* (G 00112951, **Gradstein 2015a**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005 as *Plagiochila bryopteroides*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Plagiochila bryopteroides*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, Los Robles, 2,300 m, 28 Sep 1999, *Heinrichs et al. 4165* (GOET, EGR, **Dauphin 2005; Pócs 2006b**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 27 Sep 1999, *Heinrichs et al. AHH-4163*, *AHH-4165* (G, GOET, **Holz et al. 2001**); Dota cantón, Santa María, 1,500–1,800 m, 26 Dec 1925, *Standley 43236* (US, JE, **Bonner 1962b** as *Plagiochila bryhnii* var. *ecuadoriensis*); Moravia cantón, Zurquí, 1,475–2,500 m, *Standley 48284a* (**Carl 1931b** as *Plagiochila bryopteroides*; **Herzog 1938** as *Plagiochila bryopteroides* var. *ecuadoriensis*; **Morales 1991** as *Plagiochila bryopteroides*; **Dauphin 2005** as *Plagiochila bryopteroides*); Pérez Zeledón cantón, Río Savegre, 7 Sep 1999, *Heinrichs et al. 4163* (BEGP, B, BM, CBG, EGR, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001; Groth et al. 2002, 2003; Heinrichs 2002; Heinrichs et al. 2002b, 2003a, 2004b, 2004d; Renker et al. 2002; Rycroft et al. 2004; Dauphin 2005; Pócs 2006b; Schäfer-Verwimp et al. 2006**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34539* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila demissa Gottsche, *Mexik. Leverm.*: 37, 1863 (Gottsche 1863). Type: Mexico.

COSTA RICA. S. loc., *Wercklé* (**Carl 1931b**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 42a* (R, **Reed and Robinson 1971**).

Also reported from Mexico, the Caribbean, Western South America.

Plagiochila densiflora Herzog, *Hedwigia* 72(6): 226, 1932 (Herzog 1932). Lectotype (Söderström and Hentschel 2023: 17): Costa Rica, Heredia, San Isidro, Yerba Buena, 1926, *Standley 49134* (JE-04010971 https://je.jacq.org/JE04010971, US-00073032, PC-0103076 https://science.mnhn.fr/institution/mnhn/collection/pc/item/pc0103076, F-C0000333F https://collections-botany.fieldmuseum.org/catalogue/1767914).

COSTA RICA. HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, 22–28 Feb 1926, *Standley 49134* (**TYPE, Carl 1931b**; **Herzog 1932, 1938**; **Bonner 1962b**; **Geissler and Bischler 1989**; **Morales 1991**).

Not found outside Central America.

Plagiochila dichotoma (P.Beauv.) Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 53, 1836 (Nees and Montagne 1836).

≡*Carpolepidum dichotomum* P.Beauv., *Fl. Oware* 1(3): 23, 1805 (Palisot de Beauvois 1805b). Type: Nigeria.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila* '*dicotoma*').

COSTA RICA. Cordillera de Talamanca (Holz 2003). LIMÓN: Pococí cantón, Guápiles, 300–500 m, *Standley 37087* (**Herzog 1938**; **Morales 1991**).

PANAMA. VERAGUAS: Isla Canales de Tierra, Sendero de los tanques de reserva de agua, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19750* (PMA, **Salazar Allen and Chung 2003, 2006**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa(?), East Tropical Africa, Western Indian Ocean(?), New Zealand(?), the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila disticha (Lehm. et Lindenb.) Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 107, 1840 (Lindenberg 1840).

≡*Jungermannia disticha* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 64, 1834 (Lehmann 1834). Lectotype: Guyana.

=*Plagiochila sinuata* Gottsche, *Mexik. Leverm.*: 55, 1863 (Gottsche 1863), syn. fide Inoue (1989b). Type: Mexico.

BELIZE. TOLEDO: S. loc., *Gentle 7250* (MO, **Whittemore and Allen 1996**); S. loc., *Hoist 4512* (MO, **Whittemore and Allen 1996**).

COSTA RICA. CARTAGO: Hacienda Aragón (Dauphin 2005); Turrialba cantón, Hacienda Aragón, 2,000 ft (610 m), 21 Aug 1940, *Haupt* (**Morales 1991**). GUANACASTE: Tilarán cantón, El Silencio, 750 m, *Standley 44699* (**Carl 1931b** as *Plagiochila sinuata*; **Herzog 1938** as *Plagiochila sinuata*; **Morales 1991** as *Plagiochila sinuata*). LIMÓN: Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, ~85 m, *Standley 48685*, *48707*, *48729*, *48835* (**Morales 1991**; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón, ~55 m, *Standley 48887* (**Morales 1991**; **Dauphin 2005**); Siquirres cantón, Pinea Montecristo, on the Rio Reventazón, 25 m, *Standley 48511* (**Morales 1991**; **Dauphin 2005**). PUNTARENAS: Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**). SAN JOSÉ: Pérez Zeledón cantón, El General forest, *Pittier 6056* (**Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (**Gradstein 1993**; Stotler et al. 1998). CHIRIQUÍ: Boquete distrito, Plateau above Boquete, Holcomb Trail, *Cornman 3179* (F, **Stotler et al. 1998**); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**). PANAMA WEST: Capira distrito, Altos de Campana National Park, *Salazar Allen & Gradstein 9470* (PMA, MO, **Stotler et al. 1998**); Capira distrito, Campana National Park, 800 m, *Salazar Allen et al. 6429*, *6560*, *6565* (PMA, **Stotler et al. 1998**); Capira distrito, Cerro Campana (Stotler et al. 1998); Capira distrito, Cerro Campana, *Spörle 2.2* (PMA, **Spörle 1990**); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15102* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Lake 2–3 and Big Tree Trail, *Salazar Allen 4390*, *4627* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila distinctifolia Lindenb., *Sp. Hepat.* 1: 17, 1839 (Lindenberg 1839). Syntypes: Jamaica, Brazil.

=*Plagiochila miqueliana* Lehm. et Lindenb., *Sp. Hepat.* (Lindenberg) 2–4: 95, 1840 (Lindenberg 1840), syn. fide Gradstein (2015a). Lectotype: Mexico.

=*Plagiochila distinctifolia* f. *crassiretis* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 81, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Cerro de La Carpintera, province of Cartago; altitude 1,500 to 1,850 m, Feb 1924, *Standley 35668* (JE, US-04627127 http://n2t.net/ark:/65665/351388952-8f2d-4889-8fd5-596e4ecd5228).

GUATEMALA. S. loc. (Fulford and Sharp 1990); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1902a**; **Carl 1931b**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc. (Fulford and Sharp 1990); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (YU, G, S, Müller 1851; **Hampe 1851b**; **Polakowsky 1879**); S. loc., *Pittier* (G, **Stephani 1902a**); S. loc., *Standley 51619* (**Carl 1931b**; **Morales 1991**). CARTAGO: Alto de La Estrella, *Standley 39118* (**Herzog 1938**); La Union cantón, Carpintera forest, 1,500–1,850 m, *Standley 35668* (**Carl 1931b** as *Plagiochila distinctifolia* f. *crassiretis*; **Herzog 1938**; **Geissler and Bischler 1989** as

Plagiochila distinctifolia f. *crassiretis*; **Morales 1991**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52164a* (hb. Herzog, **Herzog 1938**). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Plagiochila miqueliana*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Plagiochila miqueliana*). SAN JOSÉ: Moravia cantón, La Palma, 1,600 m, *Standley 38160* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila diversifolia Lindenb. et Gottsche, *Syn. Hepat. 5*: 640, 1847 (Gottsche et al. 1847). Lectotype: Mexico.

=*Plagiochila rhombifolia* Steph., *Bull. Soc. Roy. Bot. Belgique* 31: 181, 1893 (Stephani 1893c; not *Plagiochila rhombifolia* Steph. 1921), syn. fide Heinrichs et al. (2000c). Lectotype (Heinrichs et al. 2000c: 127 as "holotype") or possibly holotype: Costa Rica, Heredia, Rancho Flores, *Pittier 6077* (G-00061377 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126632&lang=en).

=*Plagiochila dilatata* Steph., *Bull. Herb. Boissier*, sér. 2, 5(9): 887 (=*Sp. Hepat. [Stephani]* 2: 553), 1905 (Stephani 1905d), syn. fide Gradstein (2015a). Lectotype: Venezuela.

=*Plagiochila dotensis* Herzog, *Hedwigia* 72(6): 211, 1932 (Herzog 1932), syn. fide Heinrichs et al. (2000c). Lectotype (Heinrichs et al. 2000c: 127): Costa Rica, San José, vicinity of Santa María de Dota, 1,500–1,800 m, *Standley & Valerio 43141* (JE-04010961 https://je.jacq.org/JE04010961, isolectotypes F, NY, US).

=*Plagiochila subglaucescens* Herzog, *Hedwigia* 72(6): 209, 1932 (Herzog 1932), syn. fide Heinrichs et al. (2000c). Lectotype (Heinrichs et al. 2000c: 127 as "holotype"): Costa Rica, San José, Vicinity of Santa Maria de Dota, 1,500–1,800 m, *Standley & Valerio 43236* (JE-04010965 https://je.jacq.org/JE04010965, isolectotype US-00072812 http://n2t.net/ark:/65665/35f107180-dddb-4fd3-8c2b-adceaa45f0ed).

≡*Plagiochila subglaucescens* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 72, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description).

GUATEMALA. S. loc. (Bonner 1962b as *Plagiochila dilatata*); S. loc., *Wurr* (**Stephani 1905d** as *Plagiochila dilatata*; **Geissler and Bischler 1989** as *Plagiochila dilatata*). ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 239* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Plagiochila* cf. *diversifolia*). SACATEPÉQUEZ: Volcán de Fuego, *Godman* (NY, Pérez 2009).

COSTA RICA. S. loc. (Bonner 1962b as *Plagiochila dilatata*); S. loc., 2,400 m, 1999, *Holz* (SAAR, **Heinrichs et al. 2000c**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Cole 1982, 1983, both as *Plagiochila dotensis*); S. loc., *Pittier* (**Stephani 1902b** as *Plagiochila rhombifolia*, **1905d** as *Plagiochila dilatata*; **Geissler and Bischler 1989** as *Plagiochila dilatata*). HEREDIA: Rancho Flores forest, *Pittier 6077* (G-00061377 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126632&lang=en, **TYPE** of *Plagiochila rhombifolia*, **Stephani 1893c** as *Plagiochila rhombifolia*; **Bonner 1962b** as *Plagiochila rhombifolia*; **Geissler and Bischler 1989** as *Plagiochila rhombifolia*; **Morales 1991** as *Plagiochila rhombifolia*; **Heinrichs et al. 2000c**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, *Gradstein 9454* (GOET, **Heinrichs et al. 2000c**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, *Gradstein 9505* (GOET, **Heinrichs et al. 2000c**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, 2,470 m, *Kappelle 53*, det. GOET, U (**Heinrichs et al. 2000c**); Dota cantón, San Gerardo, 2,400 m, 1999, *Holz* (GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1905&Z_CHK=4816, **Heinrichs et al. 2000c**; **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, 26 Dec 1925, *Standley & Valerio 43141*, *43145*, *43235* (JE, F, NY, US, **TYPE** of *Plagiochila dotensis*, **Herzog 1938, 1932**, both as *Plagiochila dotensis*; **Brinker 1948b** as *Plagiochila dotensis*; **Bonner 1962b** as *Plagiochila dotensis*; **Geissler and Bischler 1989** as *Plagiochila dotensis*; **Morales 1991** as *Plagiochila dotensis*; **Kappelle 1996** as *Plagiochila dotensis*; **Heinrichs et al. 2000c**); Dota cantón, Santa María, 1,500–1,800 m, 26 Dec 1925, *Standley & Valerio 43236* (JE, US, **TYPE** of *Plagiochila subglaucescens*, **Bonner 1962b** as *Plagiochila subglaucescens*; **Carl 1931b** as *Plagiochila subglaucescens*; **Herzog 1932, 1938**, both as *Plagiochila subglaucescens*; **Geissler and Bischler 1989** as *Plagiochila subglaucescens*; **Morales 1991** as *Plagiochila subglaucescens*; **Kappelle 1996** as *Plagiochila subglaucescens*; **Heinrichs et al. 2000c**; **Dauphin 2005** as *Plagiochila subglaucescens*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, 8°48′54.0″N, 82°34′33.9″W, 2,038 m, 11 Aug 2017, *Guerra* (**Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila dominicensis Taylor, *London J. Bot. 5*: 270, 1846 (Taylor 1846b). Type: Dominica.

=*Plagiochila virens* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 474, 1885 (Spruce 1885), syn. fide Heinrichs (2002). Type: Ecuador.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, 1926, *Standley & Valerio 49849* (JE, US, **Heinrichs 2002**). LIMÓN:

Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 425 m, 8 Oct 1999, *Heinrichs et al. 4330*, *4331*, *4332* (CR, GOET, **Heinrichs 2002**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 425 m, 8 Oct 1999, *Heinrichs et al. AHH 232* (GOET, **Holz et al. 2001** as *Plagiochila virens*; **Dauphin 2005**). PUNTARENAS: Coto Brus cantón, Fila Casteñas, Rio Java, 1,200–1,400 m, 1995, *Dauphin & Chacón 1711* (GOET, **Heinrichs 2002**); Coto Brus cantón, Río Java (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, 1,500 m, 1992, *Lyon 205*, *427* (MO, **Heinrichs 2002**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009). CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34566* (JE, **Schäfer-Verwimp 2014**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, on road to Pacora, 800 m, *Valdespino et al. 765* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila dussiana Steph., *Symb. Antill. (Urban)* 3(2): 277, 1902 (Stephani 1902d).

COSTA RICA. ALAJUELA: Poás Volcano, *Griffin & Araya 40* (FLAS, USJ, **Morales 1991**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America.

Plagiochila echinella Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 332, 1857 (Gottsche 1857). Type: Colombia.

COSTA RICA. Cordillera de Talamanca, *Van Dunné 120* (AMD, **Kappelle 1996**). SAN JOSÉ: Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998**); Río Tiribí, nido de vencejos, *Stiles* (**Morales 1991**).

Also reported from Northern South America, Western South America, Brazil.

Plagiochila ecuadorica (Inoue) L.Söderstr., *Phytotaxa* 208(1): 84, 2015 (Söderström et al. 2015).

≡*Steereochila ecuadorica* Inoue, *Mem. New York Bot. Gard.* 45: 279, 1987 (Inoue 1987). Type: Ecuador.

≡*Plagiochila dimorpha* Lindenb. et Gottsche var. *ecuadorica* (Inoue) Heinrichs, *Bryophyt. Biblioth.* 58: 87, 2002 (Heinrichs 2002).

COSTA RICA. S. loc. (Gradstein 1999a as *Steereochila ecuadorica*; Gradstein et al. 2001b as *Steereochila ecuadorica*; Dauphin 2005 as *Plagiochila dimorpha* var. *ecuadorica*; Gradstein and Holz 2005 as *Steereochila ecuadorica*; Gradstein 2021); S. loc., *Heinrichs et al. 4172* (**Heinrichs et al. 2000b** as *Steereochila ecuadorica*; **Dauphin 2005** as *Plagiochila dimorpha* var. *ecuadorica*); S. loc., *Holz CR 00-499* (GOET, **Heinrichs 2002** as *Plagiochila dimorpha* var. *ecuadorica*; **Groth et al. 2003** as *Plagiochila dimorpha* var. *ecuadorica*; **Heinrichs et al. 2003a**, **2004d**, **2005a**, all as *Plagiochila dimorpha* var. *ecuadorica*; **Schäfer-Verwimp et al. 2006** as *Plagiochila dimorpha* var. *ecuadorica*; **Patzak et al. 2016** as *Plagiochila dimorpha* var. *ecuadorica*); Cordillera de Talamanca (Heinrichs et al. 2003b as *Plagiochila dimorpha* var. *ecuadorica*; **Holz and Gradstein 2005b** as *Plagiochila dimorpha* var. *ecuadorica*). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 9396* (U, USJ, **Gradstein et al. 1994** as *Steereochila ecuadorica*; **Kappelle 1996** as *Steereochila ecuadorica*; **Heinrichs 2002** as *Plagiochila dimorpha* var. *ecuadorica*; **Dauphin 2005** as *Plagiochila dimorpha* var. *ecuadorica*); Pococí cantón, Pan-American Highway South, La Georgina, *Eggers CR 6/36* (TNS, **Inoue 1988** as *Steereochila ecuadorica*; **Dauphin 2005** as *Plagiochila dimorpha* var. *ecuadorica*); road from Cartago to Cerro de La Muerte, 5 km S of Reserva 3 de Junio, 2,700 m, *Gradstein & Dauphin 9699* (B-280967, U, USJ, GOET, **Gradstein et al. 1994** as *Steereochila ecuadorica*; **Heinrichs 2002** as *Plagiochila dimorpha* var. *ecuadorica*; **Dauphin 2005** as *Plagiochila dimorpha* var. *ecuadorica*). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200 m, *Heinrichs et al. 4155* (USJ, **Gradstein et al. 1994** as *Steereochila ecuadorica*; **Heinrichs et al. 2001a** as *Steereochila ecuadorica*; **Dauphin 2005** as *Plagiochila dimorpha* var. *ecuadorica*); Pérez Zeledón cantón, Cerro de La Muerte km 84 of Pan-American Highway, 26 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0190/B*, det. Pócs (EGR!, **Lüth and Schäfer-Verwimp 2004** as *Steereochila ecuadorica*); Pérez Zeledón cantón, Cerro de La Muerte, Páramo Buena Vista, 3,200 m, 1994, *Gradstein & Mues 4343*, *9739* (GOET, **Heinrichs 2002** as *Plagiochila dimorpha* var. *ecuadorica*).

Also reported from Western South America, Brazil.

Plagiochila eggersii Inoue, *Bull. Natl. Sci. Mus. Tokyo, B* 14(4): 138, 1988 (Inoue 1988). Type: Dominica.

=*Plagiochila exesa* auct. (cf. Gradstein 2016).

PANAMA. S. loc. (Gradstein and Bastos 2019; Gradstein 2021; Sierra et al. 2021). DARIÉN: Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9239* (GOET, PMA, U, **Gradstein 2016**; **Stotler et al. 1998** as *Plagiochila exesa*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Plagiochila exesa*).

Also reported from the Caribbean, Western South America, Brazil.

Plagiochila eurydictyon Herzog, *Hedwigia* 72: 207, 1932 (Herzog 1932). Lectotype (Müller et al. 1999: 741 as "holotype"): Costa Rica, Heredia, Cerro de las Caricias, N of San Isidro, on wet rocks, 2,000–2,400 m, *Standley 51956* (JE-04007587 https://je.jacq.org/JE04007587, isolectotype US-00073039 http://n2t.net/ark:/65665/30560bc17-f420-46ef-a3f9-955f3f03a7b5).

COSTA RICA. S. loc., *Heinrichs 4400* (**Dauphin 2005**). HEREDIA: Barva cantón, Cerro de Las Caricias, 2,000–2,400 m, 11 Mar 1926, *Standley 51956* (JE-04007587, **TYPE**, **Herzog**

1932, 1938; **Bonner 1962b; Geissler and Bischler 1989; Morales 1991; Müller et al. 1999; Dauphin 2005**).

Not found outside Central America.

Plagiochila excisa Steph., *Sp. Hepat. (Stephani)* 6: 153, 1918 (Stephani 1918). Lectotype (Söderström et al. 2023a: 153): Costa Rica, Talamanca, *Tonduz* (G-00061387 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127443&base=img&lang=en, isolectotypes G-00061386 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127447&lang=en, G-00061388 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127441&lang=en).

COSTA RICA. S. loc. (Bonner 1962b); S. loc., *Tonduz* (**Stephani 1918; Bonner 1962b; Geissler and Bischler 1989**).

Also reported from Western South America.

Plagiochila exigua (Taylor) Taylor, *London J. Bot. 5*: 264, 1846 (Taylor 1846b).

≡*Jungermannia exigua* Taylor, *Trans. Bot. Soc. Edinburgh* 1: 179, 1844 (Taylor 1844). Lectotype: Ireland.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Gradstein 2013b); S. loc., *Heinrichs et al. 4177* (**Heinrichs et al. 2000b; Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Papuasia, Southwestern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila expansa Gottsche, *Mexik. Leverm.*: 18, 1863 (Gottsche 1863). Type: Mexico.

GUATEMALA. S. loc. (Fulford and Sharp 1990); S. loc., *Türckheim*, in hb. Levier 5823 (G, NY, **Stephani 1905f**).

Also reported from Mexico, the Caribbean.

Plagiochila fastigiata Lindenb. et Gottsche, *Syn. Hepat. 5*: 657, 1847 (Gottsche et al. 1847). Type: Mexico.

COSTA RICA. S. loc. (Gradstein 2021). SAN JOSÉ: Pérez Zeledón cantón, Talari Lodge between San Isidro de El General and Rivas, 700–800 m, 12 Feb 1998, *Arts CR 4/78* (GOET, **Holz et al. 2001; Dauphin 2005**).

Also reported from Mexico, Western South America, Southern South America.

Plagiochila fuscolutea Taylor, *London J. Bot. 5*: 263, 1846 (Taylor 1846b). Type: Ecuador ("Peru").

=*Plagiochila jelskii* Loitl., in Szyszylowicz, *Diagn. pl. nov.*: 237, 1894 (Loitlesberger 1894), syn. fide Gradstein (1993). Type: Peru.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**); Cordillera de Talamanca, 3,325 m, *Cleef et al.* (USJ, **Gradstein et al. 1977** as *Plagiochila jelskii*); S. loc. (van Zanten and Gradstein 1987 as *Plagiochila jelskii*; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp et al. 2013; Schuster 2021); S. loc., *Heinrichs et al. 4400* (GOET, **Groth et al. 2002, 2003, 2004a, 2004b; Heinrichs 2002; Heinrichs et al. 2002b, 2003a, 2004a, 2004b, 2004d, 2005a, 2005b, 2006a, 2006b; Lindner et al. 2004; Rycroft et al. 2004; Dauphin 2005; Schäfer-Verwimp et al. 2006; Patzak et al. 2016; Renner et al. 2017a**). SAN JOSÉ: Cerro Asunción, 3,390 m, 1983, *Chaverri & López 1441* (U, **Heinrichs 2002**); Cerro Asunción (Dauphin 2005); Dota cantón, Río Savegre, Jaboncillo, 2,900 m, 4 Oct 1999, *Heinrichs et al. 4312* (GOET, **Holz et al. 2001; Heinrichs 2002; Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,390 m, *Cleef & Fournier 10199c* (USJ, U, **Morales 1991** as *Plagiochila jelskii*; **Heinrichs 2002; Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Dauphin 1694* (CR, **Dauphin 2005**).

PANAMA. S. loc. (Schuster 2021). CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: 2 km NW of Cerro Fábrega, 3,150–3,200 m, 1984, *Davidse et al. 25323* (U, **Heinrichs 2002**); 2 km NW of Cerro Fábrega, 3,150–3,200 m, 1984, *Davidse et al. 25340* (U, **Heinrichs 2002**).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila grandicrista Steph., *Bull. Herb. Boissier*, sér. 2, 5(10): 931 (=*Sp. Hepat. [Stephani]* 2: 581), 1905 (Stephani 1905c). Type: Colombia.

=*Plagiochila integricrista* Herzog, *Rev. Bryol. Lichénol.* 11(1): 14, 1939 (Herzog 1938), syn. fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 19): Costa Rica, San José, La Hondura, 1,300–1,700 m, 1924, *Standley 36212* (JE-04009193 https://je.jacq.org/JE04009193, US-00073025 http://n2t.net/ark:/65665/31fbb9d83-2e20-49c4-8b5b-46222ae85a5a).

≡*Plagiochila cristata* var. *integricrista* Herzog, *Rev. Bryol. Lichénol.* 11(1): 14, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 36.1(c); publ. in syn. [sub *Plagiochila integricrista*]).

COSTA RICA. S. loc. (**Geissler and Bischler 1989** as *Plagiochila cristata* var. *integricrista*; Schuster 2021). CARTAGO: Paraíso cantón, Tapantí National Park, Sendero Arboles Caídos, 1,300 m, 9 Oct 1999, *Heinrichs et al. 4273* (GOET, **Holz et al. 2001; Heinrichs 2002; Dauphin 2005**). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 27 Sep 1999, *Heinrichs et al. 4183* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001; Holz et al. 2001; Heinrichs 2002; Dauphin 2005; Patzak et al. 2016**); Moravia cantón, La Hondura (Dauphin 2005); Moravia cantón, La Hondura,

1,300–1,700 m, 1924, *Standley 36212* (JE-04009193 https://je.jacq.org/JE04009193, US-00073025, **TYPE** of *Plagiochila integricrista*, **Herzog 1938** as *Plagiochila integricrista*; **Bonner 1962b** as *Plagiochila integricrista*; **Geissler and Bischler 1989** as *Plagiochila integricrista*; **Heinrichs 2002**).

Also reported from Mexico, Western South America.

Plagiochila guatemalensis Steph., *Sp. Hepat.* 6:163, 1918 (Stephani 1918). Lectotype (Bonner 1962b: 130): Guatemala, Alta Verapaz, *Türckheim s.n.*, hb. Levier 5427 (G-00067835 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=133524&lang=en, isolectotype NY-00648116).

GUATEMALA. S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1918**; **Geissler and Bischler 1989**). ALTA VERAPAZ: S. loc., *Türckheim 5422* (NY, Pérez 2009); S. loc., *Türckheim* (G, **Bonner 1962b**).

Also reported from Northern South America.

Plagiochila gymnocalycina (Lehm. et Lindenb.) Mont. et Nees, *Voy. Amér. Mérid.* 7(2): 81, 1839 (Montagne 1839b).

≡*Jungermannia gymnocalycina* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 28, 1833 (Lehmann 1833). Type: Brazil.

=*Plagiochila contorta* Lindenb. et Hampe, *Linnaea* 24(3): 301, 1851 (Hampe 1851b), syn. fide Gradstein (2015a). Lectotype (Bonner 1962b: 70): Nicaragua ("Costa Rica"), Segovia, Matagalpo, 4,000 ft, *Oersted*, ex hb. Lindenb. (G-00282695 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=269504&lang=en, isolectotypes PC, S).

NICARAGUA. S. loc., *Oersted* (hb. Montagne, **Dugas 1928** as *Plagiochila contorta*); Segovia, 4,000 ft (1,219 m), *Oersted* (G, F, **Hampe 1851b** as *Plagiochila contorta*). MATAGALPA: Matagalpa in Segovia, 4,000 ft (1,219 m), *Oersted* (G, PC, **Müller 1851** as *Plagiochila contorta*; **Bonner 1962b** as *Plagiochila contorta*; **Gradstein 2015a** as *Plagiochila contorta*).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014); S. loc., *Oersted* (YU, G, S, **Stephani 1904** as *Plagiochila contorta*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, San Vito, 1998, *Arts CR 8/37* (hb. Heinrichs, **Heinrichs et al. 2001c**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Plagiochila contorta*); Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,150 m, *Spörle & Aranda 1.37* (PMA, **Stotler et al. 1998** as *Plagiochila contorta*); Gualaca distrito, Fortuna, *Spörle 1.37* (PMA, **Spörle 1990** as *Plagiochila contorta*). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34311* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 2005); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 510 m, 14 Feb 1994, *Dauphin 987*, det. S. R. Gradstein (USJ, U, **Dauphin 1995, 1999**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila heteromalla (Lehm. et Lindenb.) Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 83, 1840 (Lindenberg 1840).

≡*Jungermannia heteromalla* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 62, 1834 (Lehmann 1834). Type: Peru.

=*Plagiochila oresitropha* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 467, 1885 (Spruce 1885), syn. fide Gradstein (2015a). Type: Peru.

=*Plagiochila sylvicultrix* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 486, 1885 (Spruce 1885), syn. fide Gradstein (2015b). Type: Venezuela.

=*Plagiochila oresitropha* f. *minor* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 74, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Morales (1991). Original material: Costa Rica, vicinity of Santa María de Dota, Provincia de San José, altitude 1,500–1,800 m, 26 Dec 1925–3 Jan 1926, *Standley & Valerio 43428* (US-04627216 http://n2t.net/ark:/65665/3d5466a95-48ba-4d72-b1e1-5bc0e7ff9b8c).

GUATEMALA. S. loc. (Pagán 1939a, 1942b, both as *Plagiochila sylvicultrix*); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1905f** as *Plagiochila sylvicultrix*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila sylvicultrix*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila sylvicultrix*).

COSTA RICA. S. loc. (Pagán 1939a, 1942b, both as *Plagiochila sylvicultrix*; Gradstein and Uribe 2016 as *Plagiochila oresitropha*; Gradstein 2021); S. loc., *Oersted* (YU, G, S, **Stephani 1905d** as *Plagiochila sylvicultrix*); S. loc., *Standley 41629a*, *43428* (**Carl 1931b** as *Plagiochila oresitropha* f. *minor*); S. loc., *Standley 46969* (**Carl 1931b** as *Plagiochila oresitropha*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Plagiochila oresitropha*; Holz 2006 as *Plagiochila oresitropha*). PUNTARENAS: Monteverde, <1,500 m (Morales 1991 as *Plagiochila oresitropha*; Dauphin 2005 as *Plagiochila oresitropha*); Monteverde, May 1966, *James, M.* (R, **Reed and Robinson 1971** as *Plagiochila oresitropha*). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43945a* (**Herzog 1938** as *Plagiochila oresitropha*; **Morales 1991** as *Plagiochila oresitropha*; **Dauphin 2005** as *Plagiochila oresitropha*); Dota cantón, Finca La Cima, N de El Copey, 2,100–2,400 m, *Standley 42794* (**Carl 1931b** as *Plagiochila oresitropha*; **Herzog 1938** as *Plagiochila oresitropha*; **Morales 1991** as *Plagiochila oresitropha*; **Dauphin 2005** as *Plagiochila oresitropha*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Plagiochila oresitropha*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41860b* (US, **Carl 1931b** as *Plagiochila oresitropha*; **Herzog 1938** as *Plagiochila oresitropha*; **Morales 1991** as *Plagiochila oresitropha*; **Kappelle 1996** as *Plagiochila oresitropha*; **Dauphin 2005** as *Plagiochila oresitropha*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila husnotii Steph., *Bull. Herb. Boissier*, sér. 2, 5(2): 178 (=*Sp. Hepat. [Stephani]* 2: 506), 1905 (Stephani 1905a). Lectotype: Guadeloupe.

COSTA RICA. LIMÓN: Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 425 m, 8 Oct 1999, *Heinrichs et al. 4193* (GOET, **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila laetevirens Lindenb. *Sp. Hepat. (Lindenberg)* 2–4: 101, 1840 (Lindenberg 1840). Type: Ecuador ("Colombia").

=*Plagiochila bonplandii* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 332, 1857 (Gottsche 1857), syn. fide Söderström et al. (2023a). Lectotype (Söderström et al. 2023a: 153): "Herbier de l'Amerique équatoriale, donné par M. A. Bonpland" (PC-0098175 https://science.mnhn.fr/institution/mnhn/collection/pc/item/pc0098175?listIndex=1&listCount=2, isolectotype G-00282668 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=270768&lang=en).

=*Plagiochila micropteryx* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 107, 1864 (Gottsche 1864), syn. fide Gradstein (2015a). Type: Colombia.

=*Plagiochila tocarema* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 106, 1864 (Gottsche 1864), syn. fide Gradstein (2015a). Type: Colombia.

=*Plagiochila kroneana* Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 678 (=*Sp. Hepat. [Stephani]* 2: 215), 1902 (Stephani 1902b), syn. fide Söderström and Hagborg (2023b). Lectotype: Brazil.

=*Plagiochila caudata* Steph., *Bull. Herb. Boissier*, sér. 2, 5: 741 (=*Sp. Hep. [Stephani]* 2: 540), 1905 (Stephani 1905f), syn. with *Plagiochila micropteryx* fide Inoue (1989b). Lectotype (Bonner 1962b: 55; see also Inoue 1989b: 38 as "type") or possibly holotype: Guatemala, 31 May 1882, *Lehmann 1498* (G-00128942 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?lang=en&id=222345&;lang=en).

=*Plagiochila solox* Steph., *Sp. Hepat.* 6: 21, 1921 (Stephani 1921), syn. with *Plagiochila micropteryx* fide Inoue (1989b). Lectotype (Bonner 1962b: 281; see also Inoue 1989b: 38 as "type") if not holotype: Guatemala, Alta Verapaz, *Türckheim s.n.* (G-00051328 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?lang=en&id=284798&;lang=en).

GUATEMALA. S. loc., *Lehmann* (G, **Stephani 1905f** as *Plagiochila caudata*; **Dugas 1928** as *Plagiochila caudata*; **Freire 2006** as *Plagiochila 'micropterys'*). ALTA VERAPAZ: Cobán, *Türckheim 6060 bis* (G-00051328, **TYPE** of *Plagiochila solox*, **Freire 2006** as *Plagiochila 'micropterys'*); Cobán, 1,350 m, *Türckheim* (NY, BM, Pérez 2009 as *Plagiochila micropteryx*); S. loc., *Türckheim* (G, **Stephani 1921** as *Plagiochila solox*; **Bonner 1962b** as *Plagiochila solox*; **Geissler and Bischler 1989** as *Plagiochila solox*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila 'micropteris'*). SACATEPÉQUEZ: An den oberen Nordwestgehängen des Vulkans de Agua, 2,500 m, 31 May 1882, *Lehmann 1498* (G-00128942, **TYPE** of *Plagiochila caudata*, **Bonner 1962b** as *Plagiochila caudata*).

COSTA RICA. S. loc., *Heinrichs et al. CR-199* (**Groth et al. 2002, 2003**, both as *Plagiochila tocarema*; **Heinrichs 2002** as *Plagiochila tocarema*; **Heinrichs et al. 2002a, 2002b, 2004b, 2004d,** all as *Plagiochila tocarema*; **Renker et al. 2002** as *Plagiochila tocarema*; **Dauphin 2005** as *Plagiochila tocarema*; **Schäfer-Verwimp et al. 2006** as *Plagiochila tocarema*; **Patzak et al. 2016** as *Plagiochila tocarema*); Cordillera de Talamanca (Holz 2003 as *Plagiochila kroneana* and *Plagiochila tocarema*; **Holz and Gradstein 2005b** as *Plagiochila kroneana* and *Plagiochila tocarema*). CARTAGO: Jiménez cantón, Juan Viñas (Tonduz 1895b as *Plagiochila bonplandii*); Jiménez cantón, Juan Viñas, *Pittier 6044* (**Stephani 1893c** as *Plagiochila bonplandii*; **Morales 1991** as *Plagiochila bonplandii*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Plagiochila micropteryx*). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 27 Sep 1999, *Heinrichs et al. 4293* (GOET, **Holz et al. 2001** as *Plagiochila tocarema*; **Dauphin 2005** as *Plagiochila tocarema*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Plagiochila kroneana* and *Plagiochila tocarema*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle & Aranda 1.2* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Nacional Volcán Barú, Localidad Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, *Guerra* (**Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: INRENARE station, foothills of Cerro Pirre, *Salazar Allen & Gradstein 9217* (PMA, GOET, U, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15112* (**Dauphin et al. 2022**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila lingua Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 677 (=*Spec. Hepat. [Stephani]* 2: 214), 1902 (Stephani 1902b). Type: Brazil.

GUATEMALA. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Western South America(?), Brazil.

Plagiochila longispina Lindenb. et Gottsche, *Syn. Hepat.* 5: 642, 1847 (Gottsche et al. 1847). Lectotype: Mexico.

COSTA RICA. S. loc. (Gradstein 1999a, 2021; Dauphin 2005; Gradstein and Holz 2005; Gradstein and Uribe 2016); S. loc., *Heinrichs et al. 4148* (BEGP, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Groth et al. 2002, 2003**; **Heinrichs et al. 2002a, 2002b, 2003a, 2004d, 2006a**; **Renker et al. 2002**; **Rycroft et al. 2004**; **Dauphin 2005**; **Schäfer-Verwimp et al. 2006**; **Patzak et al. 2016**);

Cordillera de Talamanca (**Heinrichs et al. 2000a**; Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 5642a* (U, **Kappelle 1996**). *CARTAGO: Turrialba cantón, Turrialba National Park, *Dauphin et al. 3559* (CR!, **this publication**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Gradstein 9649* (**Dauphin 2005**); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, summit area, 2,850 m, *Gradstein & Solano 9649* (U, USJ, **Gradstein et al. 1994**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,200–3,300 m, *Gradstein 9670*, *9673*, *9737* (**Gradstein et al. 1994**; **Heinrichs et al. 2000c**; **Dauphin 2005**); Pérez Zeledón cantón, Cordillera de Talamanca, Cerros Cuericí, 3,160 m, *Davidse 24709 p.p.* (GOET, **Heinrichs et al. 2000c**); Pérez Zeledón cantón, Cuerecí (Dauphin 2005); Pérez Zeledón cantón, Páramo Buena Vista, *Dauphin 1695* (CR, **Dauphin 2005**).

PANAMA. PANAMA WEST: Capira distrito, Nature's Trail, Altos de Campana National Park, *Salazar Allen & Johnson 6550* (PMA, **Stotler et al. 1998**).

Also reported from Macaronesia, Mexico, Northern South America, Western South America.

Plagiochila loriloba Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 47, 1931 (Carl 1931b). Type: Colombia.

≡*Plagiochila cuneata* Lindenb. et Gottsche var. *loriloba* (Carl) Herzog, *Hedwigia* 72(6): 232, 1932 (Herzog 1932).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014 as *Plagiochila cuneata* var. *loriloba*; Gradstein 2016, 2021; Gradstein and Uribe 2016); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Turrialba cantón, Villa Mills, CATIE Station Siberia, *Holz CR 00-476* (GOET, **Groth et al. 2002**; **Patzak et al. 2016**); Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 6 Mar 2000, *Holz CR 00-466* (GOET, **Holz et al. 2001** as *Plagiochila cuneata* var. *loriloba*; **Groth et al. 2004b**; **Dauphin 2005**; **Heinrichs et al. 2006a**). SAN JOSÉ: Dota cantón, Río Savegre, Jaboncillo, 2,900 m, 4 Oct 1999, *Heinrichs et al. AHH-203* (GOET, **Holz et al. 2001** as *Plagiochila cuneata* var. *loriloba*; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Plagiochila cuneata* var. *loriloba*); Los Santos, 2,950 m, 25 May 1999, *Kunz 54* (GOET, **Holz et al. 2001** as *Plagiochila cuneata* var. *loriloba*; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34567* (JE, **Schäfer-Verwimp 2014** as *Plagiochila cuneata* var. *loriloba*).

Also reported from the Caribbean(?), Western South America.

Plagiochila macra Taylor, London J. Bot. 7: 198, 1848 (Taylor 1848). Type: Ecuador.

=*Plagiochila heterophylla* Lindenb., *Nov. Stirp. Pug.* 10: 2, 1857 (Lehmann 1857), syn. fide Gradstein (2021). Lectotype (Bonner 1962b: 139): Costa Rica, 5–8,000 ft, *Oersted*, ex hb. Lindenberg (G-00282688 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=255339&lang=en, isolectotypes S).

=*Plagiochila beauverdii* Steph., *Biblioth. Bot.* 87(2): 191, 1916 (Stephani 1916b), syn. with *Plagiochila heterophylla* fide Gradstein (2016). Type: Bolivia.

≡*Plagiochila heterophylla* Lindenb. ex Lehm. var. *beauverdii* (Steph.) Heinrichs, *Bryophyt. Biblioth.* 58: 148, 2002 (Heinrichs 2002).

=*Plagiochila trilaciniata* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 70, 1931 (Carl 1931b), syn. with *Plagiochila beauverdii* fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 22): Costa Rica, San José, Las Nubes, 1,500–1,900 m, 1924, *Standley 38470* (JE-04010841 https://je.jacq.org/JE04010841, isolectotype US-00072819 http://n2t.net/ark:/65665/37a0e7f9f-f7df-426e-9f77-3e7aeb21e878).

=*Plagiochila crassiretis* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 70, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs (2002). Original material (Heinrichs 2002: 148): Costa Rica, Cartago, Alto de La Estrella, 1924, *Standley 39060* (JE-04010813 https://je.jacq.org/JE04010813).

=*Plagiochila funkiana* var. *trilaciniata* Herzog, *Hedwigia* 72: 238, 1932 (Herzog 1932), syn. with *Plagiochila beauverdii* fide Heinrichs and Renker (2001). Lectotype (Söderström and Hentschel 2023: 19): Costa Rica, Cerros de Zurquí, northeast of San Isidro, Provincia de Heredia, altitude 2,000–2,400 m, 3 Mar 1926, *Standley & Valerio 50664* (JE-04010831 https://je.jacq.org/JE04010831, isolectotype US-04627152 http://n2t.net/ark:/65665/3e3c0fa2c-72f4-44f6-bd11-dafbd8de9150).

GUATEMALA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Plagiochila heterophylla* var. *heterophylla*). ALTA VERAPAZ: Purulhá municipio, S of Purulhá, 1,500–1,600 m, 1977, *Croat 41769* (MO, **Heinrichs 2002** as *Plagiochila heterophylla* var. *heterophylla*).

HONDURAS. CORTÉS: San Pedro Sula municipio, San Juancito Mts, Peña Blanca, 1,800–2,100 m, 1951, *Morton 7510* (US, **Heinrichs 2002** as *Plagiochila heterophylla* var. *beauverdii*).

COSTA RICA. S. loc. (**Lehmann 1857** as *Plagiochila heterophylla*; **Herzog 1932** as *Plagiochila funkiana* var. *trilaciniata*; Cole 1982 as *Plagiochila trilaciniata*; Schäfer-Verwimp 1989 as *Plagiochila heterophylla*; Schäfer-Verwimp and Pócs 2009 as *Plagiochila heterophylla* var. *heterophylla*); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851** as *Plagiochila heterophylla*); S. loc., 1,500–2,500 m, *Oersted* (ex hb. Lindenb. W, in hb. G, S-B58739, **TYPE** of *Plagiochila heterophylla*, **Stephani 1905f** as *Plagiochila heterophylla*; **Bonner 1962b** as *Plagiochila heterophylla*; **Geissler and Bischler 1989** as *Plagiochila heterophylla*; **Heinrichs 2002** as *Plagiochila heterophylla*; **Gradstein 2015a**, 2021, both as *Plagiochila heterophylla*); S. loc., *Pittier* (G, **Stephani 1905f** as *Plagiochila heterophylla*); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Plagiochila heterophylla*; Holz 2006 as *Plagiochila heterophylla*); Cordillera de Talamanca, *Kappelle 3391a* (U, **Kappelle 1996** as *Plagiochila heterophylla*). CARTAGO: Alto de La Estrella, 1924, *Standley 39060* (JE, **Carl 1931b** as *Plagiochila crassiretis*; **Morales 1991** as *Plagiochila crassiretis*; **Heinrichs 2002** as *Plagiochila heterophylla* var. *heterophylla*; **Dauphin 2005** as *Plagiochila heterophylla* var. *heterophylla*); Turrialba cantón, Volcán Turrialba (Dauphin 2005

as *Plagiochila heterophylla* var. *beauverdii*); Turrialba cantón, Volcán Turrialba, 2,000–2,400 m, 1924, *Standley 35209* (JE, **Carl 1931b** as *Plagiochila beauverdii*; **Heinrichs 2002** as *Plagiochila heterophylla* var. *beauverdii*); Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, *Standley 35309*, det. JE (**Herzog 1938** as *Plagiochila beauverdii*; **Morales 1991** as *Plagiochila beauverdii*). HEREDIA: San Isidro cantón, Cerro Zurquí (Dauphin 2005 as *Plagiochila heterophylla* var. *beauverdii*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50514* (**Bonner 1962b** as *Plagiochila funkiana* var. *trilaciniata*); San Isidro cantón, Cerro Zurquí, 2,400 m, 1924, *Standley 50664* (JE, **TYPE** of *Plagiochila funkiana* var. *trilaciniata*, **Bonner 1962b** as *Plagiochila funkiana* var. *trilaciniata*; **Heinrichs 2002** as *Plagiochila heterophylla* var. *beauverdii*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49919a* (**Herzog 1938** as *Plagiochila heterophylla*; **Morales 1991** as *Plagiochila heterophylla*; **Dauphin 2005** as *Plagiochila heterophylla* var. *heterophylla*). LIMÓN: Cordillera de Talamanca, between Río Terbí and Río Siní, 2,300–2,500 m, 1984, *Davidse et al. 28976* (U, **Heinrichs 2002** as *Plagiochila heterophylla* var. *beauverdii*); Cordillera de Talamanca, Río Terbi-Sini (Dauphin 2005 as *Plagiochila heterophylla* var. *beauverdii*). SAN JOSÉ: S. loc. (Markham and Fernández 2021 as *Plagiochila heterophylla*); Dota cantón, San Gerardo, *Heinrichs et al. 4401* (GOET, **Patzak et al. 2016** as *Plagiochila heterophylla*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Plagiochila heterophylla*); Dota cantón, San Gerardo, Los Robles, Río Savegre (Dauphin 2005 as *Plagiochila heterophylla* var. *heterophylla*); Dota cantón, San Gerardo, Río Savegre valley, 2,300 m, 1999, *Heinrichs et al. 4342*, *4345* (GOET, **Heinrichs 2002** as *Plagiochila heterophylla* var. *heterophylla*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Plagiochila heterophylla*); Vásquez de Coronado cantón, Las Nubes (Dauphin 2005 as *Plagiochila heterophylla* var. *beauverdii*); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 1924, *Standley 38470* (JE, **TYPE** of *Plagiochila trilaciniata*, **Carl 1931b** as *Plagiochila trilaciniata*; **Herzog 1938** as *Plagiochila funkiana* var. *trilaciniata*; **Geissler and Bischler 1989** as *Plagiochila trilaciniata*; **Heinrichs 2002** as *Plagiochila heterophylla* var. *beauverdii*).

PANAMA. CHIRIQUÍ: Boquete, Los Naranjos, buffer zone of Parque Internacional La Amistad (PILA) along trail of El Pianista, 8°49′07.4″N, 82°25′20″W, 1,410 m, 5 Mar 2022, det. Á. Benítez, *Arrocha 3295* (UCH, **Ellis et al. 2022b**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022** AS *Plagiochila heterophylla*).

Also reported from Northern Europe, Southwestern Europe, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila macrostachya Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 75: 1840 (Lindenberg 1840). Lectotype: Jamaica.

=*Plagiochila contingens* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 111, 1864 (Gottsche 1864), syn. fide Heinrichs (2002). Lectotype: Colombia.

=*Plagiochila flaccida* Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 75, 1840 (Lindenberg 1840), syn. fide Heinrichs (2002). Type: St. Vincent.

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 100* (USCG, Pérez 2009); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú, *Pérez 100* (USCG, Pérez 2006). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 393*, *511* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). EL PROGRESO: Montaña Canahui, 1,600–2,300 m, 1942, *Steyermark 43790a* (US, **Heinrichs 2002**). HUEHUETENANGO: S. loc., *Pérez 1408* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2347* (USCG, Pérez 2009).

COSTA RICA. S. loc., *Oersted* (YU, G, S, **Hampe 1851b**; **Polakowsky 1879**; **Heinrichs 2002**); S. loc., *Tonduz* (**Carl 1931b** as *Plagiochila contingens*). CARTAGO: Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley 51029* (**Herzog 1938** as *Plagiochila contingens*; **Morales 1991** as *Plagiochila contingens*; **Dauphin 2005**); Jimenéz cantón, Pejibaye (Dauphin 2005); Jiménez cantón, Pejibaye, 900 m, *Standley 46871* (**Carl 1931b** as *Plagiochila contingens*; **Herzog 1938** as *Plagiochila contingens*; **Morales 1991** as *Plagiochila contingens*); Jiménez cantón, Pejibaye, 900 m, *Standley 46905* (**Carl 1931b** as *Plagiochila contingens*). HEREDIA: Barva cantón, Volcán Barva, 1,950 m (Dauphin 2005); San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, 1926, *Standley 52101* (JE, US, **Morales 1991** as *Plagiochila contingens*); San Isidro cantón, Cerro de Las Lajas (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50424* (B, **Carl 1931b** as *Plagiochila contingens*; **Herzog 1938** as *Plagiochila contingens*; **Morales 1991** as *Plagiochila contingens*); San Isidro cantón, Cerro Zurquí, 2,000–2,500 m, 1926, *Standley 48088* (B, **Carl 1931b** as *Plagiochila contingens*; **Heinrichs 2002**); San Isidro cantón, Cerro Zurquí, 2,000 m, 1926, *Standley 49875* (JE, US, **Morales 1991** as *Plagiochila contingens*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49875* (**Morales 1991** as *Plagiochila contingens*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49849* (**Carl 1931b** as *Plagiochila contingens*; **Morales 1991** as *Plagiochila contingens*; **Dauphin 2005**; **Herzog 1938** as *Plagiochila contingens*); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 49780* (**Carl 1931b** as *Plagiochila contingens*). PUNTARENAS: Golfito cantón, Corcovado National Park, Esquinas, <100 m (Dauphin 2005); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008** as *Plagiochila flaccida*); Golfo Dulce (Umana and Wanek 2010 as *Plagiochila flaccida*); Monteverde, <1,500 m (Morales 1991 as *Plagiochila contingens*; Dauphin 2005); Monteverde cantón, 2 km SW station, 1,500–1,550 m, 20 Feb 1992, *Ingram et al. 1374* (FLAS-057604, **Holz et al. 2001** as *Plagiochila flaccida*; **Heinrichs 2002**; **Dauphin 2005**); Monteverde cantón, Checo Trail near Adorno clearing, 4,300 ft (1,310 m), Feb 1969, *James, W.* (R, **Reed and Robinson 1971** as *Plagiochila contingens*); Monteverde cantón, near Motas, 4 Apr 1969, *James, W. 1969-89*, *1969-94* (US, **Reed and Robinson 1971** as *Plagiochila*

contingens); Puerto Jimenez cantón, Parque Nacional Corcovado, Esquinas Sector, 146 m, 2001, *Pörtl K10* (GOET, **Heinrichs 2002**). SAN JOSÉ: Général (**Tonduz 1896** as *Plagiochila flaccida*); Moravia cantón, Cerros Zurquí, 2,000–2,500 m, *Standley 48688* (**Herzog 1938** as *Plagiochila contingens*; **Morales 1991** as *Plagiochila contingens*; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37802* (**Carl 1931b** as *Plagiochila contingens*); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37812* (JE, US-00289477 http://n2t.net/ark:/65665/32d5ebd32-07d4-4ad9-ac3b-6a4f88fccd2f, **Morales 1991** as *Plagiochila contingens*); Pérez Zeledón cantón, El General forest, *Pittier 6057* (CR, **Stephani 1893c** as *Plagiochila flaccida*; **Morales 1991** as *Plagiochila flaccida*; **Kappelle 1996** as *Plagiochila flaccida*; **Dauphin 2005**).

PANAMA. VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34296/A* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34300/A* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila montagnei Nees, *Ann. Sci. Nat. Bot.*, sér. 2, 5: 53, 1836 (Nees and Montagne 1836). Type: Guiana.

=*Plagiochila hypnoides* Willd. ex Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 37, 1840 (Lindenberg 1840), syn. fide Heinrichs and Gradstein (2000). Type: Brazil.

=*Plagiochila florida* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 494, 1885 (Spruce 1885), syn. fide Heinrichs and Gradstein (2000). Lectotype: Brazil.

=*Plagiochila hypnoides* f. *minor* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 57, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs and Gradstein (2000). Original material (Heinrichs and Gradstein 2000: 170): Panama, Canal Zone, Las Cascadas Plantation, *Standley 25678* (JE-04010840 https://je.jacq.org/JE04010840, US-04627171 (http://n2t.net/ark:/65665/39a449ff6-e5d6-4009-8339-e7ab3642785c).

=*Plagiochila hypnoides* var. *brevifolia* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 57, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs and Gradstein (2000). Original material (cf. Heinrichs and Gradstein 2000: 170): Costa Rica, Limón, Hamburg Finca on the Río Limón below Cairo, 55 m, *Standley & Valerio 48887* (JE-04010839 US-00073050 (http://n2t.net/ark:/65665/30ba6dc67-9c4e-4caf-a778-9ac694efdef5).

=*Plagiochila hypnoides* f. *propagulifera* Herzog, *Rev. Bryol. Lichénol.* 11(1): 13, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs and Gradstein (2000). Original material (cf. Heinrichs and Gradstein 2000: 171): Costa Rica, Limón, Finca Montecristo on the Río Reventazón below Cairo, 25 m, *Standley & Valerio 48511* (JE, US-04627166 http://n2t.net/ark:/65665/38bd0d15a-b00a-41e4-a81b-3f33b2d2a401).

=*Plagiochila hypnoides* var. *brevifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1): 13, 1938 (Herzog 1938), syn. fide Heinrichs and Gradstein (2000). Lectotype (Heinrichs and Gradstein 2000: 170 as "holotype"): Costa Rica, Limón, Hamburg Finca on the Río Limón below Cairo, 55 m, *Standley & Valerio 48887* (JE-04010839 https://je.jacq.org/JE04010839, isolectotype US-00073050 http://n2t.net/ark:/65665/30ba6dc67-9c4e-4caf-a778-9ac694efdef5).

GUATEMALA. S. loc. (**Stephani 1905a** as *Plagiochila florida*; Fulford and Sharp 1990 as *Plagiochila florida*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Plagiochila hypnoides*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila hypnoides*).

COSTA RICA. S. loc. (Schuster 1980d as *Plagiochila hypnoides*; Fulford and Sharp 1990 as *Plagiochila hypnoides*; Oliveira-e-Silva and Yano 2000 as *Plagiochila hypnoides*); Cordillera de Talamanca (Holz 2003 as *Plagiochila* cf. *montagnei*; Holz and Gradstein 2005b as *Plagiochila* cf. *montagnei*). CARTAGO: Turrialba cantón, Hacienda Aragón, 2,000 ft (610 m), 21 Aug 1940, *Haupt* (**Haupt 1942** as *Plagiochila hypnoides*). LIMÓN: Finca Montecristo, Reventazón River, *Standley* (Haupt 1942 as *Plagiochila hypnoides*); Guácimo cantón, Parismina, *Valerio 66* (JE, **Heinrichs and Gradstein 2000**; **Dauphin 2005**); Guácimo cantón, Parismina, 5 m, *Valerio 68* (JE, **Schuster 1960** as *Plagiochila hypnoides*; **Heinrichs and Gradstein 2000**; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48511* (**Geissler and Bischler 1989** as *Plagiochila hypnoides* f. *hypnoides*; **Heinrichs and Gradstein 2000**; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, *Standley & Valerio 48887* (**Geissler and Bischler 1989** as *Plagiochila hypnoides* var. *brevifolia*; **Dauphin 2005**); Siquirres cantón, Cairo, Finca Hamburgo, *Standley* (Haupt 1942 as *Plagiochila hypnoides*); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, ~85 m, *Standley 48685*, *48707*, *48729*, *48835* (**Carl 1931b** as *Plagiochila hypnoides*; **Herzog 1938** as *Plagiochila hypnoides*; **Schuster 1960** as *Plagiochila hypnoides*; **Heinrichs and Gradstein 2000**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón, ~55 m, *Standley 48887*, det. JE (**TYPE** of *Plagiochila hypnoides* var. *brevifolia*, **Carl 1931b** as *Plagiochila hypnoides* var. *brevifolia*; **Herzog 1938** as *Plagiochila hypnoides* var. *brevifolia*; **Bonner 1962b** as *Plagiochila hypnoides* var. *brevifolia*; **Heinrichs and Gradstein 2000**); Siquirres cantón, Pinea Montecristo, on the Rio Reventazón, 25 m, *Standley 48511* (**Herzog 1938** as *Plagiochila hypnoides* f. *propagulifera*). PUNTARENAS: Buenos Aires cantón, Boruca, ad Pacific, *Tonduz 15663* (**Schuster 1960** as *Plagiochila hypnoides*); Las Cascadas Plantation, *Standley 25678* (**Carl 1931b** as *Plagiochila hypnoides* f. *minor*; **Herzog 1938** as *Plagiochila hypnoides*; **Heinrichs and Gradstein 2000**); Osa cantón, Rincón, Puerto Escondido, 10 m, 1 Nov 1993, *Gradstein & Dauphin 9364 p.p.* (GOET, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre Valley, holiday camp Chacón, Los Robles y Sendero La Quebrada, 2,300 m, 28 Sep 1999, *Heinrichs et al. 4176* (CR, GOET, **Heinrichs et al. 2000b**; **Heinrichs 2002**; **Dauphin 2005**); Général

(**Tonduz 1896** as *Plagiochila hypnoides* f. *hypnoides*); Los Santos Forest Reserve, ~2,900 m (Holz and Gradstein 2005a as *Plagiochila* cf. *montagnei*); Pérez Zeledón cantón, El General forest, *Pittier 6056* (**Stephani 1893c** as *Plagiochila hypnoides*); Pérez Zeledón cantón, Talari Lodge between San Isidro de El General and Rivas, 700–800 m, 12 Feb 1998, *Arts CR 4/78 p.p.* (**Holz et al. 2001**; **Dauphin 2005**).

PANAMA. S. loc. (Schuster 1980d as *Plagiochila hypnoides* f. *hypnoides*; Fulford and Sharp 1990 as *Plagiochila florida*; Oliveira-e-Silva and Yano 2000 as *Plagiochila hypnoides*; Schäfer-Verwimp 2014); S. loc., *Wagner* (G, **Stephani 1905a** as *Plagiochila florida*; **Carl 1931b** as *Plagiochila florida*); Canal Zone (Schäfer-Verwimp 2014); CHIRIQUÍ: Gualaca distrito, Fortuna, *Spörle 4390* (PMA, **Spörle 1990** as *Plagiochila hypnoides*); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**). COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34743/B* (JE, **Schäfer-Verwimp 2014**). COLÓN: Colón distrito, Rio Chinilla above Nuevo Limón, *Maxon 6869a* (JE, **Heinrichs and Gradstein 2000**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Chepigana distrito, Río San António upstream from Garachine, *Hammel 7319*, det. U (**Heinrichs and Gradstein 2000**). LOS SANTOS: Las Tablas distrito, Cerro Canajagua, Halbinsel Azuero, ~950 m, *Troll Hep. Sel. Crit. 156* (JE-04001746, **Heinrichs and Gradstein 2000**). PANAMA WEST: Capira distrito, Cruces, Jan 1847 (**Mitten 1854b** as *Plagiochila hypnoides*; **Schuster 1960** as *Plagiochila hypnoides*).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila naranjoënsis Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 687 (=*Sp. Hepat. [Stephani]* 2: 224), 1902 (Stephani 1902b). Lectotype (Bonner 1962b: 204) if not holotype: Costa Rica, Rio Naranjo, *Tonduz 3075 p.p.* (G-00067796 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=128379&lang=en).

COSTA RICA. CARTAGO: Jiménez cantón, Rio Naranjo, *Tonduz 3075 p.p.* (G, **Stephani 1902b**; **Bonner 1962b**).

Not found outside Central America.

Plagiochila oerstediana Lindenb. et Hampe, *Linnaea* 24(3): 301, 1852 (Hampe 1851b). Type: Costa Rica, *Oersted s.n.* (G, PC, BM, S, C, JE-04010838 https://je.jacq.org/JE04010838).

COSTA RICA. S. loc. (**Lehmann 1857**); S. loc., *Lehmann* (hb. Montagne, **Dugas 1928**); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (**Müller 1851**); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted* (**TYPE, Hampe 1851b**; **Stephani 1905a**; **Bonner 1962b**; **Geissler and Bischler 1989**); S. loc., *Pittier* (**Stephani 1905a**). ALAJUELA: S. loc., *Polakowsky* (**Polakowsky 1879**); S. loc., Jun 1875, *Polakowsky 127a* (**Polakowsky 1877**; **Morales 1991**).

Not found outside Central America.

Plagiochila ovata Lindenb. et Gottsche, *Syn. Hepat. 5*: 656, 1847 (Gottsche et al. 1847). Lectotype: Mexico.

COSTA RICA. S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Gradstein and Uribe 2016; Gradstein 2021); S. loc., *Gradstein & Mues 9718* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Dauphin 2005**); S. loc., *Heinrichs et al. 4148* (BEGP, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs 2002**; **Schäfer-Verwimp et al. 2006**); S. loc., *Heinrichs et al. 4158* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Heinrichs 2002**; **Groth et al. 2003, 2004a**; **Heinrichs et al. 2003a, 2004d, 2005a, 2006a, 2006b**; **Dauphin 2005**; **Groth and Heinrichs 2005**; **Patzak et al. 2016**; **Renner et al. 2017a**); S. loc., *Heinrichs et al. 4169* (B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Dauphin 2005**); S. loc., 8,000 ft (2,438 m), *Oersted* (S, NY, **Hampe 1851b**; **Müller 1851**; **Polakowsky 1879**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: La Georgina (Dauphin 2005); La Georgina de Villa Mills, 2,990 m, *Kappelle 655* (U, Müller et al. 1999). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva (Dauphin 2005); Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, 2,650–2,900 m, *Gradstein & Mues 9638* (GOET, SAAR, Müller et al. 1999). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43585* (B, JE, M, US, **Carl 1931b**; **Herzog 1938**; **Morales 1991**; **Kappelle 1996**; **Müller et al. 1999**; **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Plagiochila pachyloma Taylor, *London J. Bot. 5*: 267, 1846 (Taylor 1846b). Type: Ecuador.

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, 2,900 m, 29 Sep 1999, *Heinrichs et al. 4290* (GOET, **Holz et al. 2001**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Plagiochila papillifolia Steph., *Biblioth. Bot.* 87(2): 207, 1916 (Stephani 1916b). Type: Bolivia.

=*Plagiochila verruculosa* R.M.Schust., *Amer. Midl. Naturalist* 62(2): 295, 1959 (Schuster 1959), syn. fide Heinrichs et al. (2002c). Type: Colombia.

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). PUNTARENAS: Monteverde (Morales

1991 as *Plagiochila verruculosa*); Monteverde, *James, W. 23985* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-09* (R, US, **Reed and Robinson 1971** as *Plagiochila verruculosa*); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-18b* (R, US, **Reed and Robinson 1971** as *Plagiochila verruculosa*; **Dauphin 2005**). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Macaronesia, Northern South America, Western South America, Brazil.

Plagiochila patriciae Heinrichs et H.Anton, *Bryophyt. Biblioth.* 58: 107, 2002 (Heinrichs 2002). Holotype: Costa Rica, Cartago, Pan-American Highway (km 67), Reserva 3 de Junio, 2,600 m, 1999, *Heinrichs et al. 4349* (GOET-11619 https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=11619&Z_CHK=2109, isotypes G-00128925 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=285899&lang=en, CR, G, JE, NY, MO-5381551 https://www.tropicos.org/specimen/90158121).

COSTA RICA. S. loc. (Gradstein and Uribe 2016; Gradstein 2021). CARTAGO: El Guarco cantón, 3 de Junio, *Heinrichs et al. 4349* (GOET, **Heinrichs 2002**; **Dauphin 2005**); Pan-American Highway km 70, *Holz 78* (**Dauphin 2005**); Pan-American Highway km 70, Entrada "Mirador de Quetzales," 2,650 m, 2000, *Holz CR 00-176* (GOET, **Heinrichs 2002**; **Groth et al. 2003, 2004a**; **Heinrichs et al. 2003a, 2005a, 2006b**; **Dauphin 2005**; **Patzak et al. 2016**; **Renner et al. 2017a**). LIMÓN: Talamanca cantón, Valle del Silencio, Río Terbi, 2,300–2,900 m, *Davidse 28773* (GOET, U, **Heinrichs 2002**; **Dauphin 2005**). SAN JOSÉ: Pérez Zeledón cantón, Cerro de La Muerte, Páramo Buena Vista, 2,900 m, 1999, *Heinrichs et al. 4338* (G, GOET, JE, MO, NY, **Heinrichs 2002**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Quebrada Honda in Fortuna Forest Reserve (8°45′40″N, 82°14′22″W), 1,150 m, 15 Jul 2021, *Rodriguez et al. 1102*, *1103* (UCH, **Ellis et al. 2022a**).

Also reported from the Caribbean(?), Western South America.

Plagiochila patula (Sw.) Lindenb., *Sp. Hepat. (Lindenberg)* 1: 21, 1839 (Lindenberg 1839).

≡*Jungermannia patula* Sw., *Fl. Ind. Occid.* 3: 1844, 1806 (Swartz 1806). Type: Jamaica.

=*Jungermannia martiana* Nees, *Linnaea* 6(4): 617, 1831 (Nees 1831), syn. fide Gradstein (2015a). Type: Brazil.

≡*Plagiochila martiana* (Nees) Lindenb., *Sp. Hepat. (Lindenberg)* 1: 12, 1839 (Lindenberg 1839).

=*Plagiochila dubia* Lindenb. et Gottsche, *Syn. Hepat.* 5: 630, 1847 (Gottsche et al. 1847), syn. fide Heinrichs et al. (2002a). Lectotype: Mexico.

=*Plagiochila rigidula* Lindenb. et Gottsche, *Linnaea* 20: 323, 1847 (Hampe 1847), syn. fide Gradstein (2021). Type: Venezuela ("Colombia").

=*Plagiochila fallax* Lindenb. et Hampe, *Linnaea* 24(3): 300, 1851 (Hampe 1851b), syn. fide Gradstein (2015a). Lectotype (Söderström et al. 2023a: 153): Costa Rica, *Oersted s.n.* (G-00282693 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=270160&lang=en, S-B40261, S-B46262, S-B46263).

=*Plagiochila interjecta* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 97, 1864 (Gottsche 1864), syn. fide Gradstein (2021). Type: Colombia.

GUATEMALA. S. loc., *Wurr* (**Stephani 1905a** as *Plagiochila fallax*). ALTA VERAPAZ: S. loc., *Türckheim 5426* (NY, Pérez 2009 as *Plagiochila fallax*); Cobán, 1,350 m, Dec 1906, *Türckheim 5424* (NY, Pérez 2009 as *Plagiochila rigidula*); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Plagiochila martiana*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 386* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila dubia* and *Plagiochila martiana*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila martiana*). HUEHUETENANGO: S. loc., *Pérez 1207* (USCG, Pérez 2009 as *Plagiochila martiana*). QUICHÉ: S. loc., *Pérez 2363* (USCG, Pérez 2009).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54829* (BM, **Heinrichs et al. 2002a**).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (S, NY, **Hampe 1851b** as *Plagiochila fallax*; **Müller 1851** as *Plagiochila fallax*; **Polakowsky 1879** as *Plagiochila fallax*; **Stephani 1905a** as *Plagiochila fallax*; **Bonner 1962b** as *Plagiochila fallax*; **Geissler and Bischler 1989** as *Plagiochila fallax*; **Gradstein 2015a** as *Plagiochila fallax*); Cordillera de Talamanca (Holz 2003 as *Plagiochila* cf. *patula*; Holz and Gradstein 2005b as *Plagiochila* cf. *patula*). CARTAGO: Oreamuno cantón, Río Reventado, N of Cartago, 1,460–1,650 m, *Standley 49564* (**Herzog 1938** as *Plagiochila dubia*; **Morales 1991** as *Plagiochila dubia*; **Dauphin 2005**). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, *Dauphin et al. 3333*, *3345*, *3352*, *3358*, *3366*, det. Gradstein (CR, GOET, **Dauphin 2005**; **Dauphin and Grayum 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Plagiochila martiana*). SAN JOSÉ: Cordillera de Talamanca, Fila Lleskia, 1,160 m, 4 Nov 1984, *Gómez-Pignataro et al. 23080* (JE, **Holz et al. 2001**; **Heinrichs et al. 2002a**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (Holz and Gradstein 2005a as *Plagiochila* cf. *patula*).

PANAMA. S. loc., 1906, *Hélion* (PC, **Dugas 1928**; **Stotler et al. 1998**). CHIRIQUÍ: Boquete distrito, Dexter's Brook, *Cornman 3088* (F, **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,620 m, *Schäfer-Verwimp & Verwimp 34408* (JE, **Schäfer-Verwimp 2014**); Monnick's, *Cornman 3057* (F, **Stotler et al. 1998**). DARIÉN: Cerro

Pirre (Stotler et al. 1998 as *Plagiochila dubia*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Plagiochila dubia*); Cerro Pirre, from camping site of Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9257* (PMA, U, **Stotler et al. 1998** as *Plagiochila dubia*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Camino Drayton 18–19, *Salazar Allen & Chung 4635* (PMA, **Stotler et al. 1998** as *Plagiochila dubia*; **Dauphin et al. 2022**).

COCOS I. S. loc. (Fosberg and Klawe 1966 as *Plagiochila martiana*; Dauphin 1995, 1999 both as *Plagiochila martiana*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Plagiochila martiana*); Chatham Bay, 28 Jun 1932, *Howell 225 p.p.* (CAS, **Clark 1953a** as *Plagiochila martiana*).

Also reported from North-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila paupercula Gottsche, *Mexik. Leverm.*: 22, 1863 (Gottsche 1863). Type: Mexico.

COSTA RICA. HEREDIA: Rancho Flores forest, *Pittier 6076* (G 00112951, **Morales 1991**; **Stephani 1893c**).

Also reported from Mexico.

Plagiochila pittieri Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 673 (=*Sp. Hepat. [Stephani]* 2: 210), 1902 (Stephani 1902b). Lectotype (Bonner 1962b: 234) if not holotype: Costa Rica, Montaña de Poás, 2,400 m, 1888, *Pittier s.n.*, ex hb. Bescherelle 18 (G-00121457 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=183233&lang=en).

=*Plagiochila prostrata* Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 668 (=*Sp. Hepat. [Stephani]* 2: 205), 1902 (Stephani 1902b), syn. fide Söderström and Hagborg (2023b). Lectotype (Bonner 1962b: 239): Costa Rica, Montaña de Poás, 2,400 m, *Pittier s.n.* (G-00121488 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=178993&lang=en).

COSTA RICA. S. loc., *Pittier* (**Geissler and Bischler 1989**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). ALAJUELA: Poás, 2,400 m, 1888, *Pittier* (G, **TYPE**, **Stephani 1902b**; **Bonner 1962b**); Poás, 2,400 m, 1888, *Pittier* (G, **TYPE** of *Plagiochila prostrata*, **Stephani 1902b** as *Plagiochila prostrata*; **Bonner 1962b** as *Plagiochila prostrata*; **Geissler and Bischler 1989** as *Plagiochila prostrata*). SAN JOSÉ: Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Northern South America, Western South America.

Plagiochila platyphylla Herzog, *Hedwigia* 72(1): 223, 1932 (Herzog 1932). Lectotype (Söderström and Hentschel 2023: 21): Costa Rica, Cartago, Turrialba, S slope of V. Turrialba, ~2,000–2,400 m, 22 Feb 1924, *Standley 35100* (JE-04010832 https://je.jacq.org/JE04010832, isolectotypes US-00073070 http://n2t.net/ark:/65665/3cb5211cd-14f7-4582-a39b-bb17aa14d55b, F-C0000348F https://collections-botany.fieldmuseum.org/catalogue/1767949, PC-0103081 https://science.mnhn.fr/institution/mnhn/collection/pc/item/pc0103081?lis=Index=5&=istCount=32).

≡*Plagiochila platyphylla* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 74, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description).

COSTA RICA. CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, 2 Feb 1924, *Standley 35100* (US-00073070, F-0000348C, PC-0103081, **TYPE**, **Carl 1931b**; **Herzog 1932, 1938**; **Bonner 1962b**; **Geissler and Bischler 1989**; **Morales 1991**).

Not found outside Central America.

Plagiochila punctata (Taylor) Taylor, *London J. Bot.* 5: 261, 1846 (Taylor 1846b).

≡*Jungermannia punctata* Taylor, *Trans. Bot. Soc. Edinburgh* 1: 179, 1844 (Taylor 1844). Type: Ireland.

=*Plagiochila stolonifera* Lindenb. et Gottsche, *Syn. Hepat.* 5: 655, 1847 (Gottsche et al. 1847), syn. fide Heinrichs et al. (2005b). Type: Mexico.

=*Plagiochila chinantlana* Gottsche, *Mexik. Leverm.*: 12, 1863 (Gottsche 1863), syn. fide Gradstein (2015a). Type: Mexico.

=*Plagiochila choachina* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 95, 1864 (Gottsche 1864), syn. fide Gradstein (2015a). Type: Colombia.

=*Plagiochila patzschkei* Steph., *Biblioth. Bot.* 21(87): 207, 1916 (Stephani 1916b), syn. fide Heinrichs et al. (2005b): Type: Bolivia.

=*Plagiochila choachina* var. *plurispina* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 82, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description).

≡*Plagiochila choachina* var. *plurispina* Herzog, *Rev. Bryol. Lichénol.* 11(1): 15, 1939 (Herzog 1938), syn. fide Morales (1991). Lectotype (Söderström and Hentschel 2023: 16): Costa Rica, Yerba Buena, Prov. Heredia, 2,000 m, on tree, *Standley 49889a* (JE-04010917 https://je.jacq.org/JE04010917, synlectotype *Standley 50627*, US-04627074 http://n2t.net/ark:/65665/33b491946-552f-4f10-9c6a-a178f94d7d06).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Plagiochila chinantlana*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila chinantlana*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila chinantlana*).

COSTA RICA. S. loc. (Fulford et al. 1970 as *Plagiochila chinantlana*; Cole 1982, 1983, both as *Plagiochila chinantlana*; Gradstein 1999a as *Plagiochila stolonifera*; Dauphin 2005 as *Plagiochila stolonifera*; Gradstein and Holz 2005 as *Plagiochila patzschkei* and *Plagiochila stolonifera*; Schuster 2021 as *Plagiochila choachina*); S. loc., *Standley 42346* (**Carl 1931b** as *Plagiochila choachina* var. *plurispina*); Cordillera de Talamanca (Holz 2003 as *Plagiochila stolonifera*; **Holz and Gradstein 2005b** as *Plagiochila patzschkei* and *Plagiochila stolonifera*; Holz 2006 as *Plagiochila patzschkei*). ALAJUELA: Alajuela cantón, Fraijanes, 1,500–1,700 m, *Standley 47457* (**Carl 1931b** as *Plagiochila choachina*; **Herzog 1938** as *Plagiochila choachina*; **Morales 1991** as

Plagiochila choachina; **Dauphin 2005** as *Plagiochila choachina*). CARTAGO: S. loc., 1,500 m, 1900, *Wercklé* (G [Bryotheca Levier 6275], **Heinrichs et al. 2005b**). HEREDIA: San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50627* (US, **Bonner 1962b** as *Plagiochila choachina* var. *plurispina*; **Kappelle 1996** as *Plagiochila choachina*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49862* (**Carl 1931b** as *Plagiochila choachina*; **Herzog 1938** as *Plagiochila choachina*; **Morales 1991** as *Plagiochila choachina*; **Dauphin 2005** as *Plagiochila choachina*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49889a* (**Carl 1931b** as *Plagiochila choachina* var. *plurispina*; **Herzog 1938** as *Plagiochila choachina* var. *plurispina*; **Bonner 1962b** as *Plagiochila choachina* var. *plurispina*; **Geissler and Bischler 1989** as *Plagiochila choachina* var. *plurispina*; **Morales 1991** as *Plagiochila choachina*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Plagiochila stolonifera*); Buenos Aires, Río de Volcán, *Pittier 6067* (**Stephani 1893c** as *Plagiochila chinantlana*; **Morales 1991** as *Plagiochila chinantlana*); Monteverde, <1,500 m (Morales 1991 as *Plagiochila chinantlana*; Dauphin 2005 as *Plagiochila stolonifera*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Plagiochila stolonifera*); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Plagiochila stolonifera*); Monteverde, 10 Jun 1966, *James, M. 14* (R, **Reed and Robinson 1971** as *Plagiochila chinantlana*). SAN JOSÉ: Dota cantón, Laguna de La Chonta, NE of Sta María de Dota, 1,500–2,000 m, *Standley 50627* (US, **Herzog 1938** as *Plagiochila choachina* var. *plurispina*; **Geissler and Bischler 1989** as *Plagiochila choachina* var. *plurispina*; **Morales 1991** as *Plagiochila choachina*; **Dauphin 2005** as *Plagiochila choachina*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Plagiochila patzschkei*); entre le Général et Buenos-Aires (**Tonduz 1896** as *Plagiochila chinantlana*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Plagiochila patzschkei*); Pérez Zeledón cantón, Cordillera de Talamanca, Cerro de la Muerte, Páramo Buena Vista, 3,300 m, *Heinrichs et al. 4174* (**Heinrichs et al. 2000b** as *Plagiochila patzschkei*; **Holz et al. 2001** as *Plagiochila patzschkei*; **Dauphin 2005** as *Plagiochila patzschkei*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34675* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa(?), Southern Africa(?), Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila raddiana Lindenb., *Sp. Hepat. (Lindenberg)* 1: 9, 1839 (Lindenberg 1839). Type: Brazil.

=*Plagiochila guilleminiana* Mont. ex Lindenb., *Sp. Hepat. (Lindenberg)* 5: 152, 1843 (Lindenberg 1843), syn. in Heinrichs and Gradstein (2000). Type: Brazil.

=*Plagiochila ludoviciana* Sull., *Amer. J. Sci. Arts*, ser. 2, 1(1): 73, 1846 (Gray 1846), syn. fide Heinrichs and Gradstein (2000). Type: USA.

=*Plagiochila speciosa* Lindenb. et Gottsche, *Syn. Hepat. (Lindenberg)* 5: 643, 1847 (Gottsche et al. 1847), syn. fide Heinrichs and Gradstein (2000). Lectotype: Mexico.

=*Plagiochila schlimiana* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 330, 1857 (Gottsche 1857), syn. fide Heinrichs and Gradstein (2000). Type: Colombia.

=*Plagiochila aliena* Gottsche, *Mexik. Leverm.*: 22, 1863 (Gottsche 1863), syn. fide Gradstein (2015a). Type: Mexico.

=*Plagiochila subcristata* Gottsche, *Mexik. Leverm.*: 54, 1863 (Gottsche 1863), syn. fide Gradstein (2015a). Type: Mexico.

=*Plagiochila silvatica* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 108, 1864 (Gottsche 1864), syn. fide Gradstein (2015a). Lectotype: Colombia.

=*Plagiochila anderssonii* Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 30(5): 114, 1873 (Ångström 1873), syn. fide León-Yánez et al. (2006). Type: Ecuador.

=*Plagiochila funkiana* Steph., *Bull. Herb. Boissier*, sér. 2, 5(4): 354 (=*Sp. Hepat. [Stephani]* 2: 522), 1905 (Stephani 1905e), syn. fide Heinrichs and Renker (2001). Type: Venezuela.

=*Plagiochila confusa* Steph., *Sp. Hepat. (Stephani)* 6: 140, 1918 (Stephani 1918), syn. fide Heinrichs and Gradstein (2000). Lectotype (Heinrichs and Gradstein 2000: 175 as "holotype") if not holotype: Guatemala, Alta Verapaz, Cobán, 1,350 m, *Türckheim s.n.*, Bryotheca Levier 5422 (G-00061623 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131351&lang=en).

=*Plagiochila subatra* Steph., *Sp. Hepat. (Stephani)* 6: 213, 1921 (Stephani 1921), syn. fide Heinrichs and Gradstein (2000). Type: Mexico.

=*Plagiochila aliena* f. *rupicola* Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Atlántida, Lancetilla Valley, *Standley s.n.*

=*Plagiochila caudatodecurrens* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 50, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Morales (1991). Original material: Costa Rica, vicinity of Santa María de Dota, Provincia de San José, altitude 1,500–1,800 m, on tree, 26 Dec 1925, *Standley & Valerio 43324* (JE-04008791 https://je.jacq.org/JE04008791). Note: This is a syntype of *Plagiochila subatra* var. *longidecurrens* and cited under both *Plagiochila subatra* and *Plagiochila caudatodecurrens* by Morales (1991).

=*Plagiochila crispatodecurrens* Herzog, *Hedwigia* 72(6): 214, 1932 (Herzog 1932), syn. fide Heinrichs and Gradstein (2000). Lectotype (Heinrichs and Gradstein 2000: 176 as "holotype"): Costa Rica, Cartago, Vicinity of Pejivalle, ~900 m, *Standley & Valerio 46747* (JE-04010924 https://je.jacq.org/JE04010924, isolectotypes US-00073027 http://n2t.net/ark:/65665/3430205ff-0856-4560-b13c-f2297f8062e6, F-C0000335F https://collections-botany.fieldmuseum.org/catalogue/1767912).

=*Plagiochila subatra* var. *longidecurrens* Herzog, *Rev. Bryol. Lichénol.* 11(1): 12, 1939 (Herzog 1938), syn. fide Morales (1991). Lectotype (Söderström and Hentschel 2023: 21): Costa Rica, vicinity of Santa María de Dota, Provincia de San José, altitude 1,500–1,800 m, on tree, *Standley*

& Valerio 43166 (JE-04008792 https://je.jacq.org/JE04008792, isolectotype US-00072811 http://n2t.net/ark:/65665/332ade018-155b-4648-b644-ac04b1c6dcef, synlectotypes *Standley & Valerio 43324* JE-04008791 https://je.jacq.org/JE04008791, US-04627261 http://n2t.net/ark:/65665/3af238638-9ce3-42ca-a64b-ddaf4f912711).

=*Plagiochila aliena* f. *brevifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1): 13, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a), no description), syn. fide Morales (1991). Original material: Costa Rica, Yerba Buena, northeast of San Isidro, Provincia de Heredia, altitude about 2,000 m, 22–28 Febr. 1926, *Standley & Valerio 49742* (US-04627019 http://n2t.net/ark:/65665/3881cf4a9-4701-4566-8688-1146967a18ce).

=*Plagiochila insularis* Steph., in Bartram and Arnell *Bryologist* 64(2/3): 249, 1961 (Bartram and Arnell 1961), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Leon-Yánez et al. (2006). Original material: Galapagos. Note: The specimen from Guatemala is marked as sp. nov. in NY, and the material from Galapagos was not found by Gradstein (2021), who stated that the Guatemalan material is *Plagiochila raddiana*.

=*Frullania raddiana* Lindenb. ex G.Dauphin, *Trop. Bryol.* 26: 162, 2005 (Dauphin 2005), nom. inval. (ICN2018 Art. 38.1(c); no description, error for *Plagiochila raddiana*). Original material: Costa Rica, Puntarenas, Isla de Cocos, *G. Dauphin 951* (USJ).

GUATEMALA. S. loc. (Herrera 1921, 1926, 1941, all as *Plagiochila guilleminiana*; Fulford and Sharp 1990 as *Plagiochila aliena* and *Plagiochila speciosa*); S. loc., *Lehmann* (G, **Dugas 1928** as *Plagiochila interjecta*); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1918** as *Plagiochila confusa*; **Bonner 1962b** as *Plagiochila confusa*; **Geissler and Bischler 1989** as *Plagiochila confusa*; Gradstein 2021 as *Plagiochila insularis*); S. loc., *Wurr* (**Stephani 1905c** as *Plagiochila speciosa*, **1905d** as *Plagiochila aliena*, **1905e** as *Plagiochila guilleminiana*; **Evans 1914b** as *Plagiochila guilleminiana*). ALTA VERAPAZ: S. loc., *Türckheim 5505* (NY, Pérez 2009 as *Plagiochila insularis*); Cobán, 1,350 m, 1907, *Türckheim*, hb. Levier 5826 (G, FI, **Heinrichs and Gradstein 2000**); Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Panzós municipio, 6 km NE Panzós, *Croat 41613b p.p.* (U, **Heinrichs and Gradstein 2000**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 380* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Plagiochila ludoviciana*). IZABAL: El Junquillo, 259 m, 1 Jun 1893, *Wurr* (HBG, JE, **Heinrichs and Gradstein 2000**). SACATEPÉQUEZ: An den oberen Nordwestgehängen des Vulkans de Agua, 2,500 m, 31 May 1882, *Lehmann 1498* (G-00128942, **Stephani 1894a** as *Plagiochila interjecta*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Plagiochila ludoviciana* and *Plagiochila* aff. *ludoviciana*).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Plagiochila aliena* f. *rupicola*). CORTÉS: San Francisco de Yojoa municipio, Pena Blanca, 19 Feb 1983, *Tag 1983-2* (MO!, **this publication** as *Plagiochila ludoviciana*).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Calle Los Planes, 12 Nov 2014, *Búcaro H323 p.p.*, det. Dauphin (MHES!, **this publication**).

NICARAGUA. CHONTALES: Villa Sandino municipio, 4.5 km S Highway 7 from ~3.6 km E La Gateada, 200 m, *Stevens 2860e* (U, **Heinrichs and Gradstein 2000**). JINOTEGA: Laguna Miraflores, 1,250–1,300 m, *Heinrich & Stevens 285* (U, **Heinrichs and Gradstein 2000**).

COSTA RICA. S. loc. (Fulford and Sharp 1990 as *Plagiochila schlimiana*); S. loc., *Breuer* (**Stephani 1904** as *Plagiochila schlimiana*); Cordillera de Talamanca (Holz 2003 also as *Plagiochila funkiana*; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Van Dunné 119* (AMD, **Kappelle 1996** as *Plagiochila guilleminiana*). ALAJUELA: Poás Volcano, Aug 1977, *Griffin et al. 90* (FLAS-020506, **Morales 1991** as *Plagiochila schlimiana*; **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Norris 17138*, *110191* (UC, **Norris et al. 2017**). CARTAGO: Jiménez cantón, Pejibaye, 900 m, 7–8 Feb 1926, *Standley 46747* (JE, US, F, **TYPE** of *Plagiochila crispatodecurrens*, **Herzog 1932, 1938**, both as *Plagiochila crispatodecurrens*; **Bonner 1962b** as *Plagiochila crispatodecurrens*; **Geissler and Bischler 1989** as *Plagiochila crispatodecurrens*; **Morales 1991** as *Plagiochila crispatodecurrens*; **Heinrichs and Gradstein 2000; Dauphin 2005**); Jimenéz cantón, Pejibaye, 500 m, 9 Sep 1999, *Heinrichs et al. 4311* (GOET, **Holz et al. 2001; Dauphin 2005**); Paraíso cantón, Tapanti National Park, *Griffin et al. 212*, det. H. Inoue (FLAS, **Morales 1991** as *Plagiochila schlimiana*). GUANACASTE: Tilarán cantón, El Arenal, 485–600 m, *Standley 45302* (**Carl 1931b** as *Plagiochila subatra*; **Herzog 1938** as *Plagiochila subatra*; **Morales 1991** as *Plagiochila subatra*; **Dauphin 2005**); Tilarán, 500–650 m, *Standley 46665* (**Herzog 1938** as *Plagiochila aliena*; **Morales 1991** as *Plagiochila aliena*). HEREDIA: Barva cantón, San José de la Montaña, *Morales 258*, det. Griffin (FLAS, USJ, **Morales 1991** as *Plagiochila ludoviciana*; **Dauphin 2005**); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52017* (**Herzog 1938** as *Plagiochila aliena*; **Morales 1991** as *Plagiochila aliena*); San Isidro cantón, Cerro Zurquí (Dauphin 2005); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50514* (**Carl 1931b** as *Plagiochila funkiana*; **Herzog 1938** as *Plagiochila funkiana*; **Morales 1991** as *Plagiochila funkiana*); San Isidro cantón, Cerro Zurquí, 2,400 m, 1924, *Standley 50664* (JE, **Carl 1931b** as *Plagiochila funkiana* '*funckiana*'); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49742* (**Herzog 1938** as *Plagiochila aliena* f. *brevifolia*; **Geissler and Bischler 1989** as *Plagiochila aliena* f. *brevifolia*; **Morales 1991** as *Plagiochila aliena*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49744*, *49782* (**Herzog 1938** as *Plagiochila aliena*; **Morales 1991** as *Plagiochila aliena*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Fila Pittier, 1,770–2,040 m, 2 Feb 1995, *Dauphin 1380* (GOET, **Heinrichs and Gradstein 2000; Holz et al. 2001; Dauphin 2005**); Coto Brus cantón, San Vito, Cerro Paraguas, 1,410–1,520 m, *Dauphin 1808* (GOET, **Holz et al. 2001; Dauphin 2005**); Monteverde, <1,500 m (Morales 1991 as *Plagiochila ludoviciana*; Dauphin

2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Plagiochila guillemin-iana*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 38*, *40b*, *89* (R, **Reed and Robinson 1971** as *Plagiochila ludovi-ciana*); Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, Nov 1993, *Gradstein & Dauphin 9307* (GOET, **Heinrichs and Gradstein 2000**; **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, "Los Robles," 2,300 m, 28 Sep 1999, *Heinrichs et al. 4147* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998** as *Plagioch-ila guilleminiana*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43166* (US, **Herzog 1938** as *Plagiochila subatra* var. *longidecurrens*; **Bonner 1962b** as *Plagiochila subatra* var. '*lon-gidecussens*'; **Geissler and Bischler 1989** as *Plagiochila subatra* var. *longidecurrens*; **Morales 1991** as *Plagiochila subatra*; **Kap-pelle 1996** as *Plagiochila subatra*; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43235a* (US, **Herzog 1938** as *Plagiochila aliena*; **Morales 1991** as *Plagiochila aliena*; **Kappelle 1996** as *Plagiochila aliena*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43324* (US, **Herzog 1938** as *Plagio-chila subatra* var. *longidecurrens*; **Bonner 1962b** as *Plagiochila subatra* var. '*longidecussens*'; **Geissler and Bischler 1989** as *Pla-giochila subatra* var. *longidecurrens*; **Morales 1991** as *Plagiochila subatra*; **Dauphin 2005**); La Cuesta de Bajo Tarrazu, 1,600 m, *Kappelle & Gutiérrez MK 1832* (U, **Heinrichs and Gradstein 2000**); Pérez Zeledón cantón, San Gerardo de Rivas, path to Parque Nacional Chirripó, 1,550 m, 13 Feb 1998, *Arts CR 4/43*, *CR 4/101*, *CR 4/102*, *CR 6/84* (GOET, **Holz et al. 2001**; **Dau-phin 2005**); Pérez Zeledón cantón, Talari Lodge between San Isidro de El General and Rivas, 700–800 m, 12 Feb 1998, *Arts CR 4/86* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes (Dauphin 2005); Vásquez de Coro-nado cantón, Las Nubes, 1,500–1,900 m, 1924, *Standley 38470* (JE, **Morales 1991** as *Plagiochila funkiana*).

PANAMA. S. loc. (Schuster 1980d as *Plagiochila ludovi-ciana*; Stotler et al. 1998 as *Plagiochila ludoviciana*); S. loc., 1906, *Hélion* (PC, **Stotler et al. 1998** as *Plagiochila ludoviciana*); S. loc., 1907, *Hélion* (NY, **Dugas 1928** as *Plagiochila subcris-tata*); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Bo-quete distrito, plateau above Boquete, Holcomb Trail, *Cornman 3189* (F, **Stotler et al. 1998** as *Plagiochila ludoviciana*); Gual-aca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,350 m, *Schäfer-Verwimp & Verwimp 34345* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,600 m, *Schäfer-Verwimp & Verwimp 34450* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, 2 mi (3.2 km) N of El Hato de Volcán, *Croat 10647* (MO, **Stotler et al. 1998**); Tierras Altas distrito, 4 km from Cerro Punta, behind Flor-ida State Camp, *Correa 1270* (MO, **Stotler et al. 1998**); Tier-ras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34639* (JE, **Schäfer-Verwimp 2014**); Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34151*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**). DARIÉN: Pinogana distrito, ~20 km SSW of Boca de Cupé, ~200 m, *Allen 8639* (MO, **Stotler et al. 1998** as *Plagiochila ludoviciana*). PANAMA WEST: Capira distrito, Campana National Park, *Sala-zar Allen et al. 6429* (PMA, **Stotler et al. 1998** as *Plagiochila silvatica*); Capira distrito, Cerro Campana, *Porter et al. 4173A* (MO, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Drayton, *Salazar Allen & Chung 6047* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Fairchild 12–13, *Salazar Allen & Chung 4629*, *4635*, *6047* (PMA, **Stotler et al. 1998**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Lago Alajuela, *Cornman 3002* (F, **Stotler et al. 1998** as *Plagiochila ludoviciana*); Panamá distrito, Pedro Miguel, *Corn-man 3040* (F, **Stotler et al. 1998** as *Plagiochila ludoviciana*); Pan-amá distrito, Taboga, *Seemann* (NY, **Schuster 1960** as *Plagiochila ludoviciana*). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34273* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Evans 1902a as *Plagiochila anderssо-nii*; Clark 1953a as *Plagiochila anderssonii*; Fosberg and Klawe 1966 as *Plagiochila anderssonii* and *Plagiochila guilleminiana*; Dauphin 1995, 1999, both as *Plagiochila guilleminiana*, 2005); S. loc. (**Robinson 1902** as *Plagiochila anderssonii*; **Fosberg and Klawe 1966** as *Plagiochila anderssonii*); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Plagiochila anderssonii* and *Plagio-chila guilleminiana*); Boca Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, 20 Feb 1994, *Dauphin 951* (USJ-47250!, CR!, W!, **this publication**, Dauphin 1995 as *Frullania* cf. *raddiana* [error for *Plagiochila raddiana*], 2005 as *Frullania* cf. *raddiana* [error for *Plagiochila raddiana*]); Wafer Bay, 28 Jun 1932, *Howell 232*, *241 p.p.* (CAS, **Clark 1953a** as *Plagiochila anderssonii*).

Also reported from North-Central USA, South-Central USA(?), Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila retrorsa Gottsche, *Mexik. Leverm.*: 67, 1863 (Gottsche 1863). Lectotype: Mexico.

=*Plagiochila tricarinata* Carl, *Ann. Bryol., Suppl.* 2: 74, 1931 (Carl 1931b), syn. fide Rycroft et al. (2001). Lectotype (Söderström and Hentschel

2023: 22): Costa Rica, San José: Cerro de las Vueltas, 2,700–3,000 m, *Standley & Valerio 43582* (JE-04008795 https://je.jacq.org/JE04008795, US-00072818 http://n2t.net/ark:/65665/3bf25a3c9-e68b-4e6c-b864-42b1da78c1cf, NY-1020838 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1115877).

=*Plagiochila permista* Spruce var. *subintegerrima* Herzog, *Rev. Bryol. Lichénol.* 11(1): 12, 1939 (Herzog 1938), syn. fide Rycroft et al. (2001). Lectotype (Söderström and Hentschel 2023: 20): Costa Rica, San José: Cerro de las Vueltas, 2,700–3,000 m, *Standley & Valerio 43582* (JE-04009219 https://je.jacq.org/JE04009219, isolectotypes US-00072818 http://n2t.net/ark:/65665/3bf25a3c9-e68b-4e6c-b864-42b1da78c1cf, NY-1020838 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1115877).

COSTA RICA. S. loc. (Cole 1983 as *Plagiochila tricarinata*; Sim-Sim et al. 2004; Gradstein and Holz 2005); Cordillera de Talamanca (**Holz et al. 2001**; **Holz and Gradstein 2005b**; Holz 2006). CARTAGO: Behind hotel Georgina, 2,950 m, *Gradstein & Mues 9717* (SAAR, **Rycroft et al. 2001**); Cerro de La Muerte, 2,600 m, *Gradstein & Mues 9703* (SAAR, **Rycroft et al. 2001**); La Georgina, carretera Interamericana Sur, km 78 (Dauphin 2005); Pan-American Highway (km 78) between Cartago and Cerro de la Muerte, 2,900 m, *Heinrichs et al. 4152* (GOET, CR, **Rycroft et al. 2001**); Pan-American Highway 1 km W of Hotel Georgina and 3 km W of villa Mills, 3,100 m, *Nee & Mori 3532* (MO-2140379, **Rycroft et al. 2001**); Turrialba cantón, Chirripó National Park, Cerros Cuericí, 3,200 m, *Davidse 24827*, *24834* (GOET, U, **Rycroft et al. 2001**). *PUNTARENAS: Coto Brus cantón, Cerro Echandi, 3,200 m, Aug 1983, *Gómez-Pignataro et al. 21805*, det. J. Heinrichs (GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=2371&Z_CHK=5326, **this publication**). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley & Valerio 43536* (JE, **Rycroft et al. 2001**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43536* (JE-04009219, US-00073068, **TYPE** of *Plagiochila permista* var. *subintegerrima*, **Herzog 1938** as *Plagiochila permista* var. '*subintergerima*'; **Bonner 1962b** as *Plagiochila permista* var. *subintegerrima*; **Geissler and Bischler 1989** as *Plagiochila permista* var. *subintegerrima*); Dota cantón, Cerro de Las Vueltas, ~500 m E of Sitios Garrafa, *Kappelle 2200* (GOET, U, **Rycroft et al. 2001**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley & Valerio 43582* (US, **Brinker 1948a** as *Plagiochila tricarinata*; **Geissler and Bischler 1989** as *Plagiochila tricarinata*; **Morales 1991** as *Plagiochila tricarinata*; **Kappelle 1996** as *Plagiochila tricarinata*; **Rycroft et al. 2001**; **Dauphin 2005**); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley 43582* (JE, NY-1020838, US-0007818, **TYPE** of *Plagiochila tricarinata*, **Carl 1931b** as *Plagiochila tricarinata*; **Herzog 1932**, **1938**, both as *Plagiochila tricarinata*; **Bonner 1962b** as *Plagiochila tricarinata*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, Providencia de Dota, 2,880 m, *Kappelle & Gutiérrez 1844* (GOET, U, **Rycroft et al. 2001**); Dota cantón, Rio Savegre valley, Jaboncillo, *Heinrichs et al. 4146* (GOET, **Rycroft et al. 2001**); Dota cantón, road between San Gerardo and Cerro de la Muerte, 2,900–2,920 m, *Heinrichs et al. 4154* (GOET, CR, **Rycroft et al. 2001, 2004**; **Groth et al. 2002**; **Heinrichs 2002**; **Groth et al. 2003, 2004a, 2004b**; **Heinrichs et al. 2003a, 2004a, 2004c, 2004d, 2005a, 2005b, 2006a, 2006b**; **Lindner et al. 2004**; **Dauphin 2005**; **Davison et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017a, 2017b**); Dota cantón, San Gerardo, road between San Gerardo and Pan-American Highway, 2,900–2,920 m, *Heinrichs et al. 1675*, *4153* (GOET, U, **Rycroft et al. 2001**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, Valle Río Savegre (Dauphin 2005); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Pérez Zeledón cantón, Cerro de La Muerte, Páramo Buena Vista at km 85 of Pan-American Highway, 3,100 m, *Heinrichs et al. 4150*, *4151* (G, GOET, CR, JE, **Heinrichs et al. 2000b**; **Rycroft et al. 2001**; **Heinrichs 2002**); Pérez Zeledón cantón, Chirripó National Park, Cerros Cuerecí (Dauphin 2005).

PANAMA. S. loc., *Allen 9175* (MO, **Renner et al. 2017b**).

Also reported from Southwestern Europe(?), Macaronesia, Eastern Asia, Indian Subcontinent, North-Central USA, Northeastern USA, Southeastern USA, Mexico.

Plagiochila rudischusteri H.Rob., *Beih. Nova Hedwigia* 90: 199, 1988 (Robinson 1988): Type: Venezuela.

COSTA RICA. S. loc. (Schäfer-Verwimp 2014; Gradstein 2021; Schuster 2021). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Norris 110197a*, *110836*, *110942*, *111040e* (UC, **Norris et al. 2017**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, Sendero Arboles Caídos, 1,300 m, 9 Oct 1999, *Heinrichs et al. 4272* (GOET, **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**). PUNTARENAS: Monteverde cantón, forest road "El Camino," 1,500 m, 28 Sep 1998, *Arts CR 24/03* (GOET **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9581* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 2021; Schuster 2021). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°41.4′N, 82°13.7′W, 1,280 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34480* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30790*, det. A. Schäfer-Verwimp (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34742* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34207*, *34248*, *34263/D* (JE,

Schäfer-Verwimp 2014). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9290 p.p.* (PMA, U, **Stotler et al. 1998**); Cerro Pirre, 1,200–1,300 m, 1991, *Salazar Allen & Gradstein 9290*, *9291 p.p.* (PMA, U, **Stotler et al. 1998**; **Heinrichs 2002**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, *Spörle 5200* (PMA, **Spörle 1990**); Panamá distrito, Cerro Jefe, 1,000 m, 1974, *Nee & Mori 14209* (U, **Heinrichs 2002**); Panamá distrito, Cerro Jefe, 1991, *Salazar Allen & Gradstein 9383* (U, **Heinrichs 2002**; **Heinrichs et al. 2000b**); Panamá distrito, Cerro Jefe, forest behind INTEL tower toward north, 900–1,000 m, *Salazar Allen & Chung 5200* (PMA, **Stotler et al. 1998**).

Also reported from Northern South America, Western South America.

Plagiochila rufoviridis Spruce, *Mem. Torrey Bot. Club* 1(3): 136, 1890 (Spruce 1890). Type: Bolivia.

COSTA RICA. SAN JOSÉ: Dota cantón, Santa María, 1,500–1,800 m, *Standley 41809* (US, **Herzog 1938**; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**).

Also reported from Western South America.

Plagiochila rutilans var. ***moritziana*** (Lindenb. et Gottsche) Heinrichs, *Bryologist* 105(2): 197, 2002 (Heinrichs et al. 2002b).

≡*Plagiochila moritziana* Lindenb. et Gottsche, *Linnaea* 20: 323, 1847 (Hampe 1847). Lectotype: Venezuela.

PANAMA. S. loc. (Salazar Allen et al. 2017 as *Plagiochila moritziana*); Central Panama (**Spörle et al. 1989** as *Plagiochila moritziana*; Stotler et al. 1998 as *Plagiochila moritziana*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Quebrada Arena, 1,100 m, *Spörle & Aranda 1.27* (PMA, **Stotler et al. 1998** as *Plagiochila moritziana*). PANAMA WEST: Capira distrito, Cerro Campana (Stotler et al. 1998 as *Plagiochila moritziana*); Capira distrito, Cerro Campana, *Spörle 2.1* (PMA, **Spörle 1990** as *Plagiochila moritziana*; **Stotler et al. 1998** as *Plagiochila moritziana*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila rutilans Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 47, 1840 (Lindenberg 1840) var. ***rutilans***. Type: Brazil.

=*Plagiochila cobana* Steph., *Sp. Hepat. (Stephani)* 6:138, 1918 (Stephani 1918), syn. fide Gradstein and Perez (2021). Type: Ecuador.

=*Plagiochila divaricata* Lindenb., *Sp. Hepat. (Lindenberg)* 5: 147, 1843 (Lindenberg 1843), syn. fide Gradstein (2015a). Type: St. Vincent.

=*Plagiochila distinctifolia* f. *linearifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1): 15, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs et al. (2001c). Original material (cf. Heinrichs et al. 2001c: 352): Costa Rica, Heredia, Cerro de Las Lajas N of San Isidro, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51512* (JE, US-04627125 http://n2t.net/ark:/65665/3de3ecff1-4a20-4e8c-be69-4ef28172c70c).

GUATEMALA. S. loc. (**Heinrichs et al. 2001c**; **Pérez 2009**). ALTA VERAPAZ: S. loc., *Pérez 206* (USCG, Pérez 2009); S. loc., *Türckheim 5506* (NY, Pérez 2009 as *Plagiochila cobana*); Cobán, *Pérez 206* (USCG, Pérez 2006); Cobán, *Türckheim 13* (JE, **Heinrichs et al. 2001c**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Plagiochila divaricata*). HUEHUETENANGO: S. loc., *Pérez 1401* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Plagiochila divaricata*).

COSTA RICA. S. loc. (Pagán 1939a; Arnell 1956b; Fulford 1987; Fulford and Sharp 1990; Fulford et al. 1970; Dauphin 2005); S. loc., *Tonduz* (**Stephani 1902a**); Cordillera de Talamanca, *Kappelle 1849* (CR, **Kappelle 1996**). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974**); Poás Volcano, Aug 1977, *Griffin et al. 90* (FLAS-020506, **Morales and Griffin 1983**; **Dauphin 2005**); San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, 2010, *Risk 17129* (UC, **Norris et al. 2017**). CARTAGO: Alto de La Estrella, *Standley 39118* (**Dauphin 2005**); Paraíso cantón, Orosi, Tapantí National Park, Sendero Arboles Caídos, 1,300 m, 9 Oct 1999, *Heinrichs et al. 4195* (CR, GOET, **Heinrichs et al. 2001c**; **Holz et al. 2001**; **Dauphin 2005**). GUANACASTE: Tilarán cantón, Los Ayotes, 600–700 m, *Standley 45358* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro Caricias, *Standley & Valerio 51512* (**Dauphin 2005**); San Isidro cantón, Cerro Caricias, 2,000–2,400 m, 11 Mar 1926, *Standley & Valerio 52164 p.p.* (FH, JE, US, **Holz et al. 2001**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51512* (JE, **TYPE** of *Plagiochila distinctifolia* f. *linearifolia*, **Herzog 1938** as *Plagiochila distinctifolia* f. *linearifolia*; **Geissler and Bischler 1989** as *Plagiochila distinctifolia* f. *linearifolia*; **Holz et al. 2001**); San Isidro cantón, Cerro de Las Lajas, N of San Isidro, 2,000–2,400 m, 7 Mar 1926, *Standley & Valerio 51619* (JE, **Heinrichs et al. 2001c**; **Holz et al. 2001**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50374*, *50509* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49700* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, *James, W. 23832* (**Dauphin 2005**); Monteverde, 10 Mar 1965, *James, W. & James, M. 80* (R, **Reed and Robinson 1971**; **Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-04* (R, **Reed and Robinson 1971**). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, 2,900 m, 14 Mar 2000, *Holz CR 00-654* (GOET, CR, **Heinrichs et al. 2001c**; **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43330* (**Herzog 1938**; **Morales 1991**); Moravia cantón, La

Palma, ~1,600 m, *Standley 38140* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38260* (JE, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, Quijada del Diablo, 1,200–1,600 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle & Aranda 1.34* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna, *Spörle 1.32* (PMA, **Spörle 1990**); Gualaca distrito, Hornito, Fortuna, ~1,000 m, 20 May 1988, *Salazar Allen et al. 6201 p.p.* (U, **Heinrichs et al. 2001c**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34499* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

COCOS I. Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 1010*, det. S. Gradstein Oct 1994 (USJ-47249!, CR-4468314!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 5 m, 20 Feb 1994, *Dauphin 925*, det. S. R. Gradstein (USJ, U https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1349&Z_CHK=4306, **Dauphin 1995, 1999**); Río Genio, 5°32′57″N, 87°03′56″W, 5 m, 24 Feb 1994, *Dauphin 1010*, det. S. R. Gradstein (USJ, U https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1348&Z_CHK=4305, **Dauphin 1995**); Valle Wafer, 5°32′57″N, 87°03′56″W, 5 m, 20 Feb 1994, *Dauphin 914*, det. S. R. Gradstein (USJ, U https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1347&Z_CHK=4304, **Dauphin 1995, 1999**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila rutilans var. ***standleyi*** (Herzog ex Carl) Heinrichs et D.S.Rycroft, *Bryologist* 104(3): 357, 2001 (Heinrichs et al. 2001c).

≡*Plagiochila standleyi* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 80, 1931 (Carl 1931b). Lectotype (Herzog 1932: 232; see also Söderström and Hentschel 2023: 21): Costa Rica, La Hondura, Prov. de San Jose, altitude 1,300–1,700 m, on tree, 16 Mar 1924, *Standley 37881* (JE-04008803 https://je.jacq.org/JE04008803, isolectotype US-00072809 http://n2t.net/ark:/65665/3e7f5f6d6-6d5f-41e2-8b3d-7dbff13d2335).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Plagiochila standleyi*). CARTAGO: Jimenéz cantón, Pejibaye, *Standley 47057* (**Carl 1931b** as *Plagiochila standleyi*; **Geissler and Bischler 1989** as *Plagiochila standleyi*); Jimenéz cantón, Pejibaye, 900 m, 7–28 Feb 1926, *Standley & Valerio 47057* (JE, **Brinker 1948c** as *Plagiochila standleyi*; **Heinrichs et al. 2001c**; **Hässel and Rubies 2009**). PUNTARENAS: Monteverde (Morales 1991 as *Plagiochila standleyi*); Monteverde, May 1966, *James, M.* (R, **Reed and Robinson 1971** as *Plagiochila standleyi*). SAN JOSÉ: Braulio Carillo National Park, Zurquí, Sendero "Los Jilgueros," Río Zurquí, *Heinrichs et al. 4191*, *4302* (GOET, CR, **Heinrichs et al. 2001c**); Moravia cantón, La Hondura, 1,300–1,700 m, 16 Mar 1924, *Standley 37881* (JE, **TYPE** of *Plagiochila standleyi*, **Carl 1931b** as *Plagiochila standleyi*; **Herzog 1932, 1938**, both as *Plagiochila standleyi*; **Brinker 1948c** as *Plagiochila standleyi*; **Bonner 1962b** as *Plagiochila standleyi*; **Geissler and Bischler 1989** as *Plagiochila standleyi*; **Morales 1991** as *Plagiochila standleyi*; **Heinrichs et al. 2001c**; **Hässel and Rubies 2009**).

Also reported from Western South America, Southern South America(?).

Plagiochila sachapatensis Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 679 (=*Sp. Hepat. [Stephani]* 2: 216), 1902 (Stephani 1902b). Type: Peru.

COSTA RICA. CARTAGO: Jiménez cantón, Pejibaye, 900 m, *Standley 47064* (**Herzog 1938**; **Morales 1991**). LIMÓN: Siquirres cantón, Finca La Colombiana, ~70 m, *Standley 36908/a* (**Herzog 1938**); Siquirres cantón, Finca La Colombiana, *Standley 36908* (**Morales 1991**).

Also reported from Western South America.

Plagiochila salazariae Inoue, *Bull. Natl. Sci. Mus., Tokyo B* 15(3): 91, 1989, "*Salazariii*" (Inoue 1989a). Holotype: Panamá, Chiriquí, Fortuna, Hornito, Palo Seco trail, on the Continental Divide, 30 m from the guard post, 1,150–1,245 m, on branch of tree, *Salazar Allen et al. 6414* (TNS-179301 http://www.type.kahaku.go.jp/TypeDB/bryophyta/1177, isotype PMA).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, Hornito, Palo Seco trail, on the Continental Divide, 30 m from the guard post, 1,150–1,245 m, *Salazar Allen et al. 6414* (TNS, PMA, **TYPE**, **Inoue 1989a**; **Stotler et al. 1998**; **Crosby and Engel 2006**).

Not found outside Central America.

Plagiochila simplex (Sw.) Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 54, 1840 (Lindenberg 1840).

≡*Jungermannia simplex* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

≡*Candollea simplex* (Sw.) Raddi, *Jungermanniogr. Etrusca*: 14, 1818 (Raddi 1818b).

=*Plagiochila distinctifolia* Lindenb. *γ latifolia* Lindenb., *Sp. Hepat. (Lindenberg)* 1: 17, 1839 (Lindenberg 1839), syn. fide Heinrichs et al. (1998b). Type: Guyana.

=*Plagiochila confundens* Lindenb. ex Hampe et Gottsche, *Linnaea* 25(3): 337, 1853 (Hampe and Gottsche 1852), syn. fide Heinrichs et al. (1998b). Type: Guiana.

=*Plagiochila confundens* var. *alpinoides* Herzog, *Ann. Bryol.* 4: 126, 1931 (Verdoorn 1931), syn. fide Söderström and Hentschel (2023). Lectotype (Söderström and Hentschel 2023: 17): Panama, Peninsula Azuero,

Cerro Canajaque, *Troll, Hepat. Sel. Crit. 9* (JE-04008925 https://je.jacq.org/JE04008925, isolectotypes CANM-10526, MO, and other herbaria).

=*Plagiochila confundens* f. *densifolia* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 85, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. with *Plagiochila confundens* in Morales (1991). Original material: Costa Rica, Alto de La Estrella, province of Cartago, 26–27 Mar 1924, *Standley 39107* (US-04627078 http://n2t.net/ark:/65665/3e3342ff0-bab5-40a6-bea7-ffa807f7beb9); Costa Rica, Yerba Buena, northeast of San Isidro, Provincia de Heredia, altitude about 2,000 m, 22–28 Feb 1926, *Standley & Valerio 49859* (US-04627205 http://n2t.net/ark:/65665/3498a17bb-863a-47c2-bbef-2785be1bd7b4).

=*Plagiochila confundens* f. *bipinnata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 15, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. with *Plagiochila confundens* fide Morales (1991). Original material: Costa Rica, Zurquí, Provincia de San José, altitude 2,000–2,500 m, 13 Feb 1926, *Standley & Valerio 48066* (US-04627077 http://n2t.net/ark:/65665/300ab10e0-9686-42eb-9fe5-134a629156d5).

=*Plagiochila confundens* f. *densifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1): 15, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. with *Plagiochila confundens* fide Morales (1991). Original material: Costa Rica, Alto de La Estrella, province of Cartago, 26–27 Mar 1924, *Standley 39107* (US-04627078 http://n2t.net/ark:/65665/3e3342ff0-bab5-40a6-bea7-ffa807f7beb9); Costa Rica, Yerba Buena, northeast of San Isidro, Provincia de Heredia, altitude about 2,000 m, 22–28 Feb 1926, *Standley & Valerio 49859* (US-04627205 http://n2t.net/ark:/65665/3498a17bb-863a-47c2-bbef-2785be1bd7b4).

GUATEMALA. S. loc. (**Stephani 1902a**; Bonner 1963a as *Candollea simplex*; Fulford and Sharp 1990). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 321* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Plagiochila confundens*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Plagiochila* aff. *simplex*). Note: We are not aware of any positively identified specimen from Zacapa.

COSTA RICA. S. loc. (Pagán 1939a as *Plagiochila confundens*; Fulford 1987 as *Plagiochila confundens*; Dauphin 2005; Schäfer-Verwimp and Pócs 2009); S. loc., *Pittier* (G, **Stephani 1902b** as *Plagiochila confundens*); S. loc., *Tonduz* (**Carl 1931b** as *Plagiochila confundens*). CARTAGO: Alto de La Estrella, *Standley 39107* (**Carl 1931b** as *Plagiochila confundens*; **Herzog 1938** as *Plagiochila confundens* f. *densifolia*; **Morales 1991** as *Plagiochila confundens*; **Dauphin 2005**); Alto de La Estrella, *Standley 39118* (**Dauphin 2005**); La Union cantón, Carpintera forest, *Pittier 6034* (**Stephani 1893c** as *Plagiochila confundens*; **Morales 1991** as *Plagiochila confundens*); La Union cantón, Carpintera forest, 1,500–1,850 m, *Standley 35668* (**Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52164a* (hb. Herzog, **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, 2,000–2,400 m, 7 Mar 1926, *Standley 51512* (JE, **TYPE** of *Plagiochila distinctifolia* f. *linearifolia*, **Herzog 1938** as *Plagiochila distinctifolia* f. *linearifolia*; **Geissler and Bischler 1989** as *Plagiochila distinctifolia* f. *linearifolia*; **Dauphin 2005**); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49859* (**Carl 1931b** as *Plagiochila confundens* f. *densifolia*; **Herzog 1938** as *Plagiochila confundens* f. *densifolia*; **Geissler and Bischler 1989** as *Plagiochila confundens* f. *densifolia*; **Morales 1991** as *Plagiochila confundens*; **Dauphin 2005**). LIMÓN: S. loc., 1998, *Arts 17/08* (hb. Heinrichs, **Heinrichs et al. 2001c**). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48066* (**Herzog 1938** as *Plagiochila confundens* f. *bipinnata*; **Morales 1991** as *Plagiochila confundens*; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, *Standley 38160* (**Dauphin 2005**).

PANAMA. S. loc. (**Bonner 1962b** as *Plagiochila confundens* var. *alpinoides*; **Geissler and Bischler 1989** as *Plagiochila confundens* var. *alpinoides*; Stotler et al. 1998 as *Plagiochila confundens* var. *alpinoides*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Tierras Altas distrito, Parque Internacional La Amistad, Las Nubes, sendero Panamá Verde, 8°53′37.4″N, 82°38′52.5″W, 2,218 m, Sep 2015–Jul 2016, *Guerra-Batista et al.* (**Guerra-Batista et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**). LOS SANTOS: Las Tablas distrito, Península de Azuero, Cerro Canajagua, *Troll 10526* (CANM, **Ireland and Ley 1984** as *Plagiochila confundens* var. *alpinoides*); Las Tablas distrito, Península de Azuero, Cerro Canajagua, *Troll* (**Carl 1931b** as *Plagiochila confundens*; **Verdoorn 1931** as *Plagiochila confundens* var. *alpinoides*; **Stotler et al. 1998** as *Plagiochila confundens* var. *alpinoides*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila stricta Lindenb., *Sp. Hepat. (Lindenberg)* 1: 20, 1839 (Lindenberg 1839). Type: Jamaica.

=*Plagiochila acanthoda* Lindenb. et Gottsche, *Syn. Hepat.* 5: 633, 1847 (Gottsche et al. 1847), syn. fide Heinrichs et al. (1998a). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Puente de Nauatl, Oct 1906, *Türckheim 5091* (NY, Pérez 2009). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc., *Standley 51619* (**Morales 1991** as *Plagiochila acanthoda*); S. loc. (Cole 1982, 1983, both as *Plagiochila acanthoda*; Sim-Sim et al. 2004); S. loc., *Heinrichs 4401* (GOET, **Dauphin 2005**; **Renner et al. 2017b**); S. loc., *Heinrichs et al. CR 98* (**Heinrichs et al. 2000b**; **Heinrichs 2002**; **Dauphin 2005**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); Cordillera de Talamanca, *Kappelle 3967a* (U, **Kappelle 1996** as *Plagiochila acanthoda*). ALAJUELA: Alajuela cantón, Viento Fresco, *Standley 47718* (**Morales 1991** as *Plagiochila acanthoda*); Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47788c*

(**Herzog 1938** as *Plagiochila acanthoda*; **Dauphin 2005** as *Plagiochila acanthoda*). CARTAGO: Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, 1926, *Standley & Torres 51029* (FH, **Holz et al. 2001**; **Dauphin 2005**); La Union cantón, Carpintera forest, 1,500–1,850 m, *Standley 35668* (**Morales 1991** as *Plagiochila acanthoda*). HEREDIA: Barva cantón, Barva forest, *Pittier 6038* (**Stephani 1893c** as *Plagiochila acanthoda*; **Morales 1991** as *Plagiochila acanthoda*); Barva cantón, Volcán Barva, 1,950 m (Dauphin 2005 as *Plagiochila acanthoda*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50627* (US, **Carl 1931b, 1932,** both as *Plagiochila acanthoda*; **Herzog 1938** as *Plagiochila acanthoda*; **Morales 1991** as *Plagiochila acanthoda*; **Dauphin 2005** as *Plagiochila acanthoda*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Dauphin 2005 as *Plagiochila acanthoda*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Plagiochila acanthoda*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 70* (R, **Reed and Robinson 1971** as *Plagiochila acanthoda*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Finca La Cima, N de El Copey, 1,300–2,400 m, *Standley 42813* (**Carl 1931b** as *Plagiochila acanthoda*; **Herzog 1938** as *Plagiochila acanthoda*; **Morales 1991** as *Plagiochila acanthoda*; **Dauphin 2005** as *Plagiochila acanthoda*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo, *Heinrichs et al. 4401* (GOET, **Heinrichs 2002**; **Rycroft et al. 2002**; **Groth et al. 2003, 2004a**; **Heinrichs et al. 2004a, 2004c, 2004d, 2005a, 2005b, 2006a, 2006b**; **Lindner et al. 2004**; **Davison et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017a**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, Los Robles, *Holz et al. AHH-098* (**Dauphin 2005**); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,000 m, 2 Mar 1999, *Holz CR 99-041* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, Río Savegre Valley between holiday camp Chacón and waterfall, 2,300 m, 28 Sep 1999, *Heinrichs et al. AHH-98* (CR, GOET, **Holz et al. 2001**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**); Moravia cantón, Braulio Carrillo National Park, Sector Zurquí, Sendero Los Jilgueros, 1,400 m, 8 Oct 1999, *Heinrichs et al. AHH-212* (CR, **Holz et al. 2001**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36272* (**Carl 1931b** as *Plagiochila acanthoda*; **Herzog 1938** as *Plagiochila acanthoda*; **Morales 1991** as *Plagiochila acanthoda*; **Dauphin 2005** as *Plagiochila acanthoda*); Moravia cantón, La Palma, 1,600 m, *Standley 38160* (**Morales 1991** as *Plagiochila acanthoda*).

Also reported from Macaronesia, East Tropical Africa(?), Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila subdenudata Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 673 (=*Sp. Hepat. [Stephani]* 2: 210), 1902 (Stephani 1902b). Lectotype (Bonner 1962b: 294) if not holotype: Costa Rica, entre La Laguna de Barva et le Carrisal, 2,800 m, 1889, *Pittier 6012* (G-00064171 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126690&lang=en).

COSTA RICA. HEREDIA: Barva cantón, between Laguna de Barva and Carrizal, 2,800 m, 1889, *Pittier 6012* (G-00064171 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126690&lang=en, **TYPE, Stephani 1902b**; **Bonner 1962b**; **Geissler and Bischler 1989**).

Not found outside Central America.

Plagiochila subplana Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 73, 1840 (Lindenberg 1840). Type: Brazil.

=*Plagiochila kegeliana* Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 685 (=*Sp. Hepat. [Stephani]* 2: 222), 1902 (Stephani 1902b), syn. fide Herzog (1952). Lectotype: Surinam.

=*Plagiochila tuerckheimii* Steph., *Sp. Hepat. (Stephani)* 6: 231, 1921 (Stephani 1921), syn. fide Heinrichs et al. (1999). Lectotype (Bonner 1962b: 321; see also Heinrichs et al. 1999: 172 as "holotype"): Guatemala, Alta Verapaz, Samox, 400 m, *Türckheim s.n.*, hb. Levier 5093 (G-00061565 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127413&lang=en, isolectotype F-0000349C).

=*Plagiochila hondurensis* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 78, 1931 (Carl 1931b), syn. fide Heinrichs et al. (1999). Lectotype (Heinrichs et al. 1999: 172): Costa Rica, Limón, Guápiles, 300–500 m, *Standley 37139* (JE-04001523 https://je.jacq.org/JE04001523).

≡*Plagiochila hondurensis* Herzog, *Hedwigia* 72: 204, 1932 (Herzog 1932), nom. superfl. (cf. Heinrichs et al. 2018).

=*Plagiochila leptodictyon* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 78, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs et al. (1999). Lectotype (Heinrichs et al. 1999: 172 as "holotype"): Costa Rica, Limón, La Colombiana Farm of the United Fruit Company, 70 m, *Standley 36815* (JE-04001539 https://je.jacq.org/JE04001539, isolectotypes PC-0103079, US-00073053).

≡*Plagiochila leptodictyon* Herzog, Hedwigia 72: 206, 1932 (Herzog 1932), nom. superfl. (cf. Heinrichs et al. 2018).

=*Plagiochila hondurae* Steph. ex M.C.Cole, *Brenesia* 21: 149, 1983 (Cole 1983), nom. inval. (ICN2018 Art. 38.1(a); no description, error(?) for *Plagiochila hondurensis*). Original material: Costa Rica.

GUATEMALA. S. loc. (Clark and Svihla 1948a; Arnell 1956b as *Plagiochila tuerckheimii*; **Fulford and Sharp 1990** as *Plagiochila tuerckheimii*; Schäfer-Verwimp and Pócs 2009 as *Plagiochila tuerckheimii*; Schuster 2021); S. loc., *Türckheim*, hb. Levier 5823 (G, NY, **Stephani 1921** as *Plagiochila tuerckheimii*; **Bonner 1962b** as *Plagiochila tuerckheimii*; **Geissler and Bischler 1989** as *Plagiochila tuerckheimii*); S. loc., *Wurr* (**Stephani 1905f**). ALTA VERAPAZ: Cobán municipio, Samox, 1,600 m, *Türckheim (hb. Levier 5093)* (G, **Heinrichs et al. 1999**); Cobán municipio, Samox, 400 m, *Türckheim 5093* (G-00061535 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127413&lang=en, F-C0000349F, **TYPE** of *Plagiochila tuerckheimii*); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez*

279 (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Plagiochila* cf. *subplana*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

HONDURAS. S. loc. (Schuster 2021). ATLÁNTIDA: Tela municipio, La Fragua, ~20 m, *Standley 55785* (JE, **Herzog 1932, 1938**, both as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54994* (**Herzog 1938** as *Plagiochila hondurensis*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 52948* (JE, **Herzog 1932, 1938**, both as *Plagiochila hondurensis*; **Bonner 1962b** as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53994* (JE, **Herzog 1932** as *Plagiochila hondurensis*; **Bonner 1962b** as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** as *Plagiochila hondurensis*); Tela municipio, Lancetilla Valley, 20–600 m, 6 Dec 1927, *Standley 54564* (JE, **Carl 1931b** as *Plagiochila hondurensis*; **Herzog 1932, 1938**, both as *Plagiochila hondurensis*; **Bonner 1962b** as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**).

COSTA RICA. S. loc. (Clark and Svihla 1948a; Cole 1982, 1983, both as *Plagiochila 'hondurae'*; Geissler and Bischler 1989 as *Plagiochila hondurensis*; Schuster 2021); S. loc., *Kegel* (G-23724, **Stephani 1902b** as *Plagiochila kegeliana*; **Dauphin 2005**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park (Dauphin 2005); Paraíso cantón, Tapanti National Park, 1,400–1,700 m, *Gómez-Pignataro 19383* (GOET, U, **Heinrichs et al. 1999**). GUANACASTE: Tilarán cantón, El Silencio, ~750 m, 13 Jan 1926, *Standley 44590* (JE, **Carl 1931b, 1932**, both as *Plagiochila hondurensis*; **Herzog 1932, 1938**, both as *Plagiochila hondurensis*; **Bonner 1962b** as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Morales 1991** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 2,000 m, 8 Oct 1999, *Heinrichs et al. 4168* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Pococí cantón, Guápiles, 300–500 m, 12–13 Mar 1924, *Standley 37139* (JE-04001523 https://je.jacq.org/JE04001523, **TYPE** of *Plagiochila hondurensis*, **Carl 1931b** as *Plagiochila hondurensis*; **Herzog 1932, 1938**, both as *Plagiochila hondurensis*; **Bonner 1962b** as *Plagiochila hondurensis*; **Geissler and Bischler 1989** as *Plagiochila hondurensis*; **Morales 1991** as *Plagiochila hondurensis*; **Heinrichs et al. 1999**; **Dauphin 2005**); Siquirres cantón, Finca La Colombiana, ~70 m, 6–7 Mar 1924, *Standley 36815* (JE-04001539 https://je.jacq.org/JE04001539, PC-0103079, US-00073053, **TYPE** of *Plagiochila leptodictyon*, **Carl 1931b** as *Plagiochila leptodictyon*; **Herzog 1932, 1938**, both as *Plagiochila leptodictyon*; **Bonner 1962b** as *Plagiochila leptodictyon*; **Geissler and Bischler 1989** as *Plagiochila leptodictyon*; **Morales 1991** as *Plagiochila leptodictyon*; **Heinrichs et al. 1999**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Las Cruces, Wilson Botanical Garden, 1,150 m, 14 Feb 1998, *Arts CR 8/25* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Coto Brus cantón, Las Cruces, Wilson Botanical Garden, 1,150 m, 14 Feb 1998, *Arts CR 8/28* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 80–140 m (GOET, **Wanek and Pörtl 2008**); Golfo Dulce (Umana and Wanek 2010); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Plagiochila tuerckheimii*); S. loc., 1906, *Hélion* (PC, **Stotler et al. 1998** as *Plagiochila tuerckheimii*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.2* (U, **Spörle 1990** as *Plagiochila hondurensis*). COLÓN: Colón distrito, near end of road past Salamanca, 300–400 m, *Knapp & Sytsma 2419* (GOET, U, **Heinrichs et al. 1999**). DARIÉN: INRENARE station, foothills of Cerro Pirre, *Salazar Allen & Gradstein 9217* (PMA, GOET, U, **Heinrichs et al. 1999**).

COCOS I. S. loc. (**Bonner 1962b** as *Plagiochila kegeliana*); between Wafer and Chatham, 100–232 m, *Gómez-Pignataro 18006*, *18025*, *18031*, *18106* (GOET, U, **Heinrichs et al. 1999**); Valle Wafer, *5°32′57″N, 87°03′56″W*, 0–10 m, 9 Jan 1990, *Dauphin 925*, det. J. Heinrichs (USJ-47244, CR-4468315!, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1349&Z_CHK=4306, W! https://w.jacq.org/W0207468, **this publication**); Valle Wafer, 5°32′57″N, 87°03′56″W, 0–5 m, 19 Jan 1990, *Dauphin 914*, det. J. Heinrichs (USJ-47245, CR-4468316!, GOET https://gwdu64.gwdg.de/pls/herbar/moos$moos.QueryViewByKey?P_ID=1347&Z_CHK=4304, W https://w.jacq.org/W0207469, **this publication**); Wafer Bay, *Weber B-14321* (JE, **Heinrichs et al. 1999**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila superba var. ***macrotricha*** (Spruce) Heinrichs, *Bryophyt. Biblioth.* 58: 114, 2002 (Heinrichs 2002).

≡*Plagiochila macrotricha* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 476, 1885 (Spruce 1885). Lectotype: Peru.

COSTA RICA. HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, 1926, *Standley & Valerio 49849* (JE, US, **Heinrichs 2002**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, Zurquí, 2,000–2,500 m, 1926, *Standley & Valerio 48088* (B, US, **Heinrichs 2002**; **Dauphin 2005**).

Also reported from Northern South America, Western South America, Brazil.

Plagiochila superba (Nees ex Sprengel) Mont. et Nees, *Voy. Amér. Mérid.* 7(2): 81, 1839 (Montagne 1839b) var. ***superba***.

≡*Jungermannia superba* Nees ex Sprengel, *Syst. Veg. (ed. 16) [Sprengel]* 4(2): 326, 1827 (Sprengel 1827a): Type: "Nova Hollandia" (probably old Nova Hollandia in Brazil, cf. Meagher 2008).

=*Plagiochila pichinchensis* Taylor, *London J. Bot. 5*: 259, 1846 (Taylor 1846b), syn. fide Heinrichs (2002). Type: Ecuador.

=*Plagiochila quelchii* Steph., *Bull. Herb. Boissier*, sér. 2, *5*(4): 366 (=*Sp. Hepat. [Stephani]* 2: 534), 1905 (Stephani 1905e), syn. fide Dugas (1929). Lectotype: Guyana.

=*Plagiochila bradeana* Steph., *Sp. Hepat.(Stephani)* 6: 133, 1918 (Stephani 1918), syn. fide Heinrichs (2002). Lectotype (Söderström et al. 2023a: 152; cf. Heinrichs 2002 as "holotype"): Costa Rica, s. loc., 1903, *Brade s.n.* (G-00264683 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=241817&lang=en).

=*Plagiochila verapazana* Steph., *Sp. Hepat. (Stephani)* 6: 240, 1921 (Stephani 1921), syn. fide Heinrichs (2002). Lectotype (Heinrichs 2002: 111): Guatemala, Alta Verapaz, Cobán, 1,550 m, *Türckheim s.n.*, Bryotheca Levier 6054 (G-00061615 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127981&lang=en, synlectotype *Levier 6052* G-00061599 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127982&lang=en).

=*Plagiochila contingens* Gottsche f. *longifolia* Herzog, *Rev. Bryol. Lichénol.* 11(1): 10, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 39.1; no Latin description), syn. fide Heinrichs (2002). Original material (cf. Heinrichs 2002: 111): Costa Rica, Heredia, Yerba Buena NE of San lsidro, 2,000 m, 1926, *Standley & Valerio 49875* (JE, US-04627085 http://n2t.net/ark:/65665/3edcfa105-f1fd-44f9-8611-692810f6b55b), Cerro de las Caricias, N of San Isidro, 2,000–2,400 m, 1926, *Standley & Valerio 52101* (JE, US-04627083 http://n2t.net/ark:/65665/3d5b899cc-096b-459d-9c67-82139fef5d38).

=*Plagiochila parcispina* Herzog, *Beih. Bot. Centralbl.* 61B(3): 565, 1942 (Herzog 1942b), syn. fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 20): Costa Rica, San José, La Palma, 1,600 m, 1924, *Standley 33196* (JE-04008940 https://je.jacq.org/JE04008940, US-00073067 http://n2t.net/ark:/65665/36a18f1e8-3436-4b65-b745-5d836c8ff456).

GUATEMALA. S. loc. (Pagán 1942b; **Fulford and Sharp 1990** as *Plagiochila verapazana*); S. loc., 1841, *Friedrichstahl* (W, **Heinrichs 2002**). ALTA VERAPAZ: Cobán, 1,550 m, *Türckheim*, hb. Levier 6054 (G-00061615 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127981&lang=en, **TYPE** of *Plagiochila verapazana*, **Stephani 1921** as *Plagiochila verapazana*; **Bonner 1962b** as *Plagiochila verapazana*; **Geissler and Bischler 1989** as *Plagiochila verapazana*; **Heinrichs 2002**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Pagán 1942b; **Bonner 1962b** as *Plagiochila contingens* f. *longifolia*); S. loc., *Heinrichs et al. 4173* (**Heinrichs et al. 2000b**; **Dauphin 2005**); S. loc., *Pittier* (G, **Stephani 1905e** as *Plagiochila pichinchensis*); S. loc., 1903, *Brade* (G-00264683 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=241817&lang=en, **TYPE** of *Plagiochila bradeana*, **Stephani 1918, 1924**, both as *Plagiochila bradeana*; **Carl 1931b** as *Plagiochila bradeana*; **Bonner 1962b** as *Plagiochila bradeana*; **Geissler and Bischler 1989** as *Plagiochila bradeana*; **Heinrichs 2002**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 3859* (U, **Kappelle 1996** as *Plagiochila pichinchensis*). CARTAGO: Jiménez cantón, Pejibaye, 900 m, *Standley 46905* (**Herzog 1938** as *Plagiochila bradeana*; **Morales 1991** as *Plagiochila bradeana*); Jiménez cantón, Pejibaye, 3 de Junio, 2,600 m (Dauphin 2005); Paraíso cantón, Cordillera Talamanca, Tapanti, Sendero "Natural Arboles Cafdos," 1,500 m, 1999, *Heinrichs et al. 4333* (**Heinrichs 2002**); Paraíso cantón, Orosi, Tapantí National Park, Sendero Arboles Caídos (Dauphin 2005). HEREDIA: San Isidro cantón, Cerro Caricias, ~2,000 m (Dauphin 2005); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, 1926, *Standley 52101* (JE, US, **TYPE** of *Plagiochila contingens* f. *longifolia*, **Herzog 1938** as *Plagiochila contingens* f. *longifolia*; **Geissler and Bischler 1989** as *Plagiochila contingens* f. *longifolia*; **Heinrichs 2002**); San Isidro cantón, Cerro Zurquí, 2,000 m, 1926, *Standley 49875* (JE, US, **TYPE** of *Plagiochila contingens* f. *longifolia*, **Geissler and Bischler 1989** as *Plagiochila contingens* f. *longifolia*; **Heinrichs 2002**); San Isidro cantón, Yerba Buena, 2,000 m (Dauphin 2005); San Isidro cantón, Yerba Buena, *Standley 49870* (**Morales 1991** as *Plagiochila bradeana*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49875* (**Herzog 1938** as *Plagiochila contingens* f. *longifolia*); San Isidro cantón, Yerba Buena, NE of San Isidro, 2,000 m, *Standley 49780* (**Herzog 1938** as *Plagiochila bradeana*). PUNTARENAS: Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Cerro Amigos, 10°18′N, 84°48′W, 1,830 m, 1992, *Lyon 400* (MO, **Heinrichs 2002**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo, Río Savegre (Dauphin 2005); Dota cantón, San Gerardo, Rio Savegre valley, holiday camp Chacon, "Los Robles," Sendero "La Quebrada," 2,300 m, 28 Sep 1999, *Heinrichs et al. 4175* (CR, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Holz et al. 2001**; **Groth et al. 2002, 2003**; **Heinrichs 2002**; **Heinrichs et al. 2002b, 2003a, 2005a, 2006b**; **Groth and Heinrichs 2003**; **Dauphin 2005**; **Patzak et al. 2016**; **Renner et al. 2017a**); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37802* (**Herzog 1938** as *Plagiochila bradeana*; **Morales 1991** as *Plagiochila bradeana*); Moravia cantón, La Palma, ~1,600 m, *Standley 38152* (**Herzog 1938** as *Plagiochila bradeana*; **Morales 1991** as *Plagiochila bradeana*); Moravia cantón, La Palma, ~1,600 m, 1924, *Standley 33196* (JE-04008940 https://je.jacq.org/JE04008940, **TYPE** of *Plagiochila parcispina*, **Herzog 1942b, 1951**, both as *Plagiochila parcispina*; **Bonner 1962b** as *Plagiochila parcispina*; **Geissler and Bischler 1989** as *Plagiochila parcispina*; **Morales 1991** as *Plagiochila parcispina*; **Heinrichs 2002**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Plagiochila quelchii*); Gualaca distrito, Fortuna

Forest Reserve, Quebrada Alemán, 1,200–1,400 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,040 m, *Spörle & Aranda 1.38* (PMA, **Stotler et al. 1998** as *Plagiochila quelchii*); Gualaca distrito, Fortuna, *Spörle 1.38* (PMA, **Spörle 1990** as *Plagiochila quelchii*). DARIÉN: Cerro Pirre, 1,200–1,300 m, 1991, *Salazar Allen & Gradstein 9289* (U, **Heinrichs 2002**); Cerro Pirre, 1,200–1,300 m, 1991, *Salazar Allen & Gradstein 9291* (U, **Heinrichs 2002**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila tabinensis Steph., *Bull. Herb. Boissier*, sér. 2, 2(10): 862 (*Sp. Hepat. [Stephani]* 2: 231), 1902 (Stephani 1902a). Type: Peru.

COSTA RICA. S. loc. (Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Chirripó National Park, Camino de Los Indios (Dauphin 2005); Chirripó National Park, Camino de los Indios, 2,800 m, *Kappelle 5742* (CR, **Heinrichs et al. 2001b**; **Heinrichs 2002**); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 2,600 m, 3 Oct 1999, *Heinrichs et al. 4156* (CR, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs et al. 2000b, 2001b, 2005a, 2006b**; **Heinrichs and Anton 2001**; **Holz et al. 2001**; **Heinrichs 2002**; **Groth and Heinrichs 2003**; **Groth et al. 2003, 2004a**; **Dauphin 2005**); El Guarco cantón, 3 de Junio, Pan-American Highway km 67, 3 Jan 2000, *Holz CR 00-001* (GOET, CR, **Heinrichs et al. 2001b**); El Guarco cantón, La Esperanza (Dauphin 2005); Pan-American Highway (km 78) between Cartago and Cerro de la Muerte, 2,900 m, 3 Oct 1999, *Heinrichs et al. 4142* (GOET, JE, **Heinrichs et al. 2000b, 2001b**; **Heinrichs 2002**); Paraíso cantón, Tapanti National Park, Reserva "La Esperanza del Guarco," 2,400 m, 25 Nov 1999, *Holz & Sipman CR 99-771* (GOET, CR, **Heinrichs et al. 2000b, 2001b**; **Heinrichs 2002**); Turrialba cantón, Villa Mills, CATIE Station Siberia (Dauphin 2005); Turrialba cantón, Villa Mills, Pan-American Highway (km 100), CATIE Station Siberia, 1999, *Holz CR 99-790* (GOET, CR, **Heinrichs 2002**); Turrialba cantón, Villa Mills, Pan-American Highway (km 100), CATIE Station Siberia, 29 Nov 1999, *Holz et al. CR 99-790* (GOET, CR, **Heinrichs et al. 2001b**). LIMÓN: Cerros Tararia, Tres Picos (Dauphin 2005); Cordillera de Talamanca, Cerros Tararia, Tres Picos, 2,400–2,600 m, 10 Sep 1984, *Davidse et al. 28876A* (GOET, CR, **Heinrichs et al. 2001b**; **Heinrichs 2002**). SAN JOSÉ: Dota cantón, Rio Savegre valley, Jaboncillo, *Heinrichs et al. 4146* (GOET, **Patzak et al. 2016**; **Renner et al. 2017a**); Moravia cantón, Cerro Zurquí (Dauphin 2005).

Also reported from Northern South America, Western South America.

Plagiochila tenera Steph., *Sp. Hepat. (Stephani)* 6: 231, 1921 (Stephani 1921). Lectotype (Bonner 1962b: 307): Costa Rica, Rio Naranjo, Mar 1893, *Tonduz s.n.*, hb. Levier 15653 (G-00061487 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126711&lang=en, isolectotypes JE s.n. https://www.jacq.org/detail.php?ID=1296013, MICH-514958). Note: J. Heinrichs stated in an annotation to the lectotype that it contains two species but did not say which species they are.

COSTA RICA. CARTAGO: Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz*, hb. Levier 15653 (G-00061487 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126711&lang=en, **TYPE, Stephani 1921**; **Bonner 1962b**).

Not found outside Central America.

Plagiochila tenuis Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 50, 1840 (Lindenberg 1840). Type: St. Vincent.

=*Plagiochila bidens* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 4, 8: 322, 1857 (Gottsche 1857), syn. fide Gradstein (2015b). Type: Guadeloupe.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Plagiochia*' *tenuis*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. Cordillera de Talamanca, *Van Dunné 129* (AMD, U, **Kappelle 1996** as *Plagiochila bidens*). PUNTARENAS: S. loc. (**Merwin et al. 2001** also as *Plagiochila bidens*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9422*, *9433* (U, **Gradstein et al. 1994**; **Dauphin 2005**). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Plagiochila bidens*); Dota cantón, San Gerardo, 9°35′40′N, 83°44′30′W, 3,000 m, Aug 1992, *Van Dunné* (**Van Dunné and Kappelle 1998** as *Plagiochila bidens*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila tonduzana Steph., *Sp. Hepat. (Stephani)* 6: 227, 1921 (Stephani 1921). Lectotype (Söderström and Hagborg 2023a: 154): Costa Rica, Cartago, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz* (G-00121258 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=170190&lang=en, isolectotypes G-00121234 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=170191&lang=en).

COSTA RICA. CARTAGO: Jiménez cantón, Rio Naranjo, 200–250 m, Mar 1893, *Tonduz*, hb. Boisser 2069 (G-00121258 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=170190&lang=en, **TYPE, Stephani 1921**; **Bonner 1962b**; **Geissler and Bischler 1989**). *PUNTARENAS: Buenos Aires cantón, Boruca, *Tonduz 15660* (G-00121233!, **this publication**).

Not found outside Central America.

Plagiochila trichostoma Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 113, 1864 (Gottsche 1864). Lectotype: Colombia.

=*Plagiochila granatensis* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 111, 1864 (Gottsche 1864), syn. fide Gradstein (2015a). Type: Colombia.

=*Plagiochila permista* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 481, 1885 (Spruce 1885), syn. fide Heinrichs et al. (2002b). Type: Ecuador.

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350–1,500 m, 1 Nov 1907, *Türckheim 5571*, det. Stephani (NY, Pérez 2009 as *Plagiochila granatensis*).

COSTA RICA. S. loc. (Gradstein 2021; Schuster 2021); S. loc., *Tonduz* (**Carl 1931b**; **Morales 1991**; **Dauphin 2005**); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). CARTAGO: Cordillera de Talamanca, km 78 of Pan-American Highway between Cartago and Cerro de La Muerte, 2,900 m, 3 Oct 1999, *Heinrichs et al. 4164* (GOET, **Holz et al. 2001**; **Dauphin 2005**); El Guarco cantón, La Esperanza, *Kappelle 357* (**Dauphin 2005**); El Guarco cantón, La Esperanza, 2,700 m, 1985, *Kappelle 357* (U, **Heinrichs et al. 2002b**). PUNTARENAS: Coto Brus cantón, Cerro Echandi, 3,200 m, 1983, *Gómez-Pignataro et al. 21812*, det. U (**Heinrichs et al. 2002b**; **Dauphin 2005**,). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas (Dauphin 2005); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43536* (JE-04009219, US-00073068, **Morales 1991** as *Plagiochila permista*); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43687* (US, **Carl 1931b** as *Plagiochila permista*; **Herzog 1938** as *Plagiochila permista*; **Morales 1991** as *Plagiochila permista*; **Kappelle 1996** as *Plagiochila permista*); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43812* (**Carl 1931b** as *Plagiochila permista*; **Herzog 1938** as *Plagiochila permista*; **Morales 1991** as *Plagiochila permista*); Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Plagiochila permista*); Dota cantón, Los Robles, *Heinrichs et al. 4324* (GOET, **Groth et al. 2002, 2003, 2004a, 2004b**; **Heinrichs 2002**; **Heinrichs et al. 2002b, 2004a, 2005a, 2005b, 2006a, 2006b**; **Lindner et al. 2004**; **Rycroft et al. 2004**; **Dauphin 2005**; **Patzak et al. 2016**; **Renner et al. 2017a**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, Río Savegre Valley, 2,700 m, 29 Sep 1999, *Heinrichs et al. 4234* (CR, GOET, **Holz et al. 2001**); Dota cantón, San Gerardo, Río Savegre, 2,700 m, 1999, *Heinrichs et al. 4323* (GOET, CR, **Heinrichs et al. 2002b**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Northern South America, Western South America, Southern South America(?).

Plagiochila truncata Gottsche, *Mexik. Leverm.*: 25, 1863 (Gottsche 1863). Type: Mexico.

PANAMA. PANAMA WEST: Capira distrito, Nature's Trail, Altos de Campana National Park, 850 m, *Spörle* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, Western South America.

Plagiochila turgida Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 63, 1931 (Carl 1931b). Lectotype (Söderström and Hentschel 2023: 22; cf. Heinrichs 2002: 116 as "holotype"): Costa Rica, Cartago, El Muñeco, S of Navarro, ~1,400 m, 1924, *Standley 33935* (JE-04001527 https://je.jacq.org/JE04001527, isolectotypes B, US-00072821 http://n2t.net/ark:/65665/3776a8154-9166-4419-a9a5-ac0a5e8c326f) .

=*Plagiochila longaeva* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 63, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, *Standley 52297*. Note: We have not found any material corresponding to this collection number and think it is a misprint for "52292" and thus the same as in Herzog (1932).

=*Plagiochila longaeva* Herzog, *Hedwigia* 72(6): 201, 1932 (Herzog 1932), syn. fide Heinrichs (2002). Lectotype (Söderström and Hentschel 2023: 20; cf. Heinrichs 2002: 116 as "holotype"): Costa Rica, Heredia, Cerro de las Caricias, N of San Isidro, 2,000–2,400 m, 1926, *Standley 52292* (JE-04008966 https://je.jacq.org/JE04008966, B, FH, PC-0097287, US-00073054).

=*Plagiochila contingens* Gottsche f. *minor* Herzog, *Rev. Bryol. Lichénol.* 11(1): 10, 1939 (Herzog 1938), nom. inval. (ICN2018 Art. 39.1; no Latin description), syn. fide Heinrichs (2002). Original material: Costa Rica, La Hondura, Prov. De S. José, 1,500–1,700 m, *Standley 37812* (JE, US-00289477 http://n2t.net/ark:/65665/32d5ebd32-07d4-4ad9-ac3b-6a4f88fccd2f).

†**HONDURAS.** S. loc., *Standley 37812* (Bonner 1962b as *Plagiochila contingens* f. *minor*). Note: This is a mistake for La Hondura in Costa Rica.

COSTA RICA. CARTAGO: Cartago cantón, El Muñeco, S of Navarro, ~1,400 m, 8–9 Feb 1924, *Standley 33935* (JE-04001527 https://je.jacq.org/JE04001527, B, US-00072821, **TYPE**, **Carl 1931b**; **Herzog 1932, 1938**; **Bonner 1962b**; **Geissler and Bischler 1989**; **Morales 1991**; **Heinrichs 2002**; **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, 11 Mar 1926, *Standley 52292* (JE-04008966 https://je.jacq.org/JE04008966, B, FH, PC-0097287, US-00073054, **TYPE** of *Plagiochila longaeva*, **Carl 1931b** as *Plagiochila longaeva*; **Herzog 1932, 1938**, both as *Plagiochila longaeva*; **Bonner 1962b** as *Plagiochila longaeva*; **Geissler and Bischler 1989** as *Plagiochila longaeva*; **Morales 1991** as *Plagiochila longaeva*; **Heinrichs 2002**; **Dauphin 2005**). LIMÓN: San Miguel cantón, Los Angeles (Dauphin 2005); San Miguel cantón, Los Angeles, Volcán Irazú, 1,300 m, 1990, *Chacón & Herrera 770* (MO, **Heinrichs 2002**). SAN JOSÉ: Moravia cantón, La Hondura (Dauphin 2005); Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 37812* (JE, US-00289477 http://n2t.net/ark:/65665/32d5ebd32-07d4-4ad9-ac3b-6a4f88fccd2f, **TYPE** of *Plagiochila contingens* f. *minor*, **Herzog 1938** as *Plagiochila contingens* f. *minor*; **Bonner 1962b** as *Plagiochila contingens* f. *minor*; **Geissler and Bischler 1989** as *Plagiochila contingens* f. *minor*; **Heinrichs 2002**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna, 1,050–1,150 m, 1988, *Spörle & Aranda PAN4057*, *PAN4058* (GOET, **Heinrichs 2002**). PANAMA WEST: Capira distrito, Altos de Campana National Park, 850 m, 1991, *Salazar Allen 9465* (U, **Heinrichs 2002**). VERAGUAS: Santa Fe distrito, W of Santa Fe, Cordillera de Tute, Cerro Tute, 950–1,250 m, 1981, *Knapp & Sytsma 2614* (U, **Heinrichs 2002**).

Also reported from Western South America.

Plagiochila undata Sull., *Amer. J. Sci. Arts*, ser. 2, 1(1): 73, 1846 (Gray 1846). Type: USA.

COSTA RICA. ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Norris 110390* (UC-2053173, **Norris et al. 2017**).

Also reported from North-Central USA, Northeastern USA(?), Southeastern USA, Mexico, the Caribbean.

Plagiochila vincentina Lindenb., *Sp. Hepat. (Lindenberg)* 2–4: 39, 1840 (Lindenberg 1840). Lectotype: St. Vincent.

=*Plagiochila diversispina* Steph., *Bull. Herb. Boissier*, sér. 2, 2(8): 675 (=*Sp. Hepat. [Stephani]* 2: 212), 1902 (Stephani 1902b), syn. fide Gradstein (2006a). Type: Venezuela.

=*Plagiochila vincentina* Lindenb. f. *minor* Herzog ex Carl, *Ann. Bryol., Suppl.* 2: 52, 1931 (Carl 1931b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Heinrichs (2002). Original material (cf. Heinrichs et al. 2002: 119): Costa Rica, Limon, Finca Montecristo on the Rio Reventazón below Cairo, ~25 m, *Standley & Valerio 48480* (B, JE, US-04627276 http://n2t.net/ark:/65665/3293e026c-fdbe-41b3-8f3c-60ed70ce616e).

≡*Plagiochila vincentina* Lindenb. f. *minor* Herzog, *Rev. Bryol. Lichénol.* 11(1): 11, 1939 (Herzog 1938), nom. inval. (ICN2018 Art 38.1(a); no description).

GUATEMALA. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUICHÉ: S. loc., *Pérez 2311* (USCG, Pérez 2009).

COSTA RICA. S. loc. (Pagán 1942b). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, 2010, *Risk 17210* (UC, **Norris et al. 2017**). CARTAGO: Jiménez cantón, Pejibaye, 900 m, 1926, *Standley 47187* (**Carl 1931b**; **Herzog 1938**; **Morales 1991**; **Heinrichs 2002**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, 1,450 m, 1999, *Holz CR 99-428* (GOET, **Heinrichs et al. 2000b**; **Heinrichs 2002**); Paraíso cantón, Tapantí National Park, Orosi Valley, Sendero "La Oropéndola," Pantanoso, 600 m, 30 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1406* (GOET, **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**). LIMÓN: Finca Montecristo, *Standley 48489* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 2,000 m, 8 Oct 1999, *Heinrichs et al. 4162* (CR, B, BM, CBG, hb. Drehwald, E, hb. Frahm, G, GOET, hb. Heinrichs, JE, KRAM, MO, NICH, NY, S, hb. Schäfer-Verwimp, W. Further, **Heinrichs and Anton 2001**; **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 2,000 m, 8 Oct 1999, *Heinrichs et al. 4166*, *4167* (CR, GOET, **Holz et al. 2001**; **Heinrichs 2002**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Quebrada González, Las Palmas trail, 425 m, 8 Oct 1999, *Heinrichs et al. 4331* (CR, GOET, **Groth et al. 2003**; **Heinrichs et al. 2003a**, **2004d**, **2005a**; **Schäfer-Verwimp et al. 2006**; **Patzak et al. 2016**; **Renner et al. 2017a**); Siquirres cantón, Pinea Montecristo, on the Rio Reventazón, below Cairo, 25 m, *Standley 48480* (B, JE, US, **TYPE** of *Plagiochila vincentina* f. *minor*, **Carl 1931b** as *Plagiochila vincentina* f. *minor*; **Herzog 1938** as *Plagiochila vincentina* f. *minor*; **Geissler and Bischler 1989** as *Plagiochila vincentina* f. *minor*; **Morales 1991**; **Heinrichs 2002**).

PANAMA. S. loc., *Seemann* (BM, NY, **Heinrichs 2002**). CHIRIQUÍ: Boquete distrito, Holcomb Trail, *Cornman 3137* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Cerro Punta, *Croat 13782c*, det. Inoue as Plagiochila diversispina (PMA, **Stotler et al. 1998** as *Plagiochila diversispina*). COCLÉ: La Pintada distrito, Cerro Tife, trail from Caño Sucio to the waterfall of the Rio Tife, 400–500 m, *Knapp 3759* (MO, NY, **Heinrichs 2002**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9256* (PMA, U, **Stotler et al. 1998**; **Heinrichs 2002**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Plagiochila vincentina* f. *minor*).

COCOS I. S. loc. (Dauphin 2005); S. loc., *Dauphin 1104* (USJ, **Dauphin 1999**); S. loc., *Tonduz 6282* (G-25149, M, **Heinrichs 2002**); between Wafer and Chatham, 100–232 m, 1981, *Gómez-Pignataro 17987*, *18017*, *18100* (U, **Heinrichs 2002**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 964*, det. S. Gradstein Oct 1994 (USJ-47247, CR-4468317!, W!, U, **Dauphin 1995**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 10 Mar 1990, *Dauphin A9*, det. G. Dauphin Mar 2021 (USJ!, CR-4468319!, **this publication**); Cutter Rockaway, 1967, *Klawe* (US, **Heinrichs 2002**); Sendero a Cerro Yglesias, 5°31′50.13″N, 87°03′57.05″W, 345 m, 26 Jun 2012, *Estrada et al. 5872*, det. G. Dauphin Jul 2016 (CR-281369!, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Plagiochila vulcanica Steph., *Bull. Herb. Boissier*, sér. 2, 2: 671 (=*Sp. Hepat. [Stephani]* 2: 208), 1902 (Stephani 1902b). Lectotype (Bonner 1962b: 332) if not holotype: Costa Rica, Río del Volcán, *Pittier 6067* (G-00061525 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=126620&lang=en).

COSTA RICA. HEREDIA: San Isidro cantón, Yerba Buena, 2,000 m, *Standley 49983* (**Herzog 1938**; **Morales 1991**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Río del Volcán, *Pittier* (**Stephani 1902b**; **Geissler and Bischler 1989**); Buenos Aires, Río de Volcán, *Pittier 6067* (**Bonner 1962b**).

Not found outside Central America.

Pleurozia Dumort., *Recueil Observ. Jungerm.*: 15, 1835 (Dumortier 1835).

Pleurozia heterophylla Steph. ex Fulford, *Mem. New York Bot. Gard.* 23: 842, 1972 (Fulford 1972). Type: Venezuela.

HONDURAS. S. loc. (Rico and Pócs 2004; Mandl et al. 2008; Gradstein 2021). OLANCHO: S. loc., *Allen 127018* (MO, **Thiers 1993**). SANTA BÁRBARA: S. loc., *Allen 11663* (MO, **Thiers 1993**); S. loc., *Allen 11680* (MO, **Thiers 1993**).

Also reported from Northern South America, Western South America.

Porella L., *Sp. Pl.* 1: 1106, 1753 (Linnaeus 1753).

Porella brachiata (Taylor) Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 334 (Spruce 1885).

≡*Madotheca brachiata* Taylor, *London J. Bot.* 6: 341, 1847 (Taylor 1847). Type: Ecuador.

COSTA RICA. S. loc. (Cole 1982, 1983). CARTAGO: El Guarco cantón, La Georgina, *Griffin et al. 423* (FLAS, **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**). SAN JOSÉ: S. loc., 2,900 m, 3–5 Sep 1973, *Griffin et al. 019955* (BR, L, NY, **So 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Porella crispata (Hook.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

≡*Jungermannia crispata* Hook., *Pl. crypt. (Hooker)*: tab. 4b, 1816 (Hooker 1816a). Type: Colombia.

=*Madotheca subciliata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 7: 9, 1838 (Lehmann 1838), syn. fide So (2005). Type: Ecuador.

=*Madotheca arborea* Taylor, *London J. Bot.* 5: 379, 1864 (Taylor 1846a), syn. fide Swails (1970). Type: Ecuador.

≡*Porella arborea* (Taylor) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

=*Madotheca subciliata* var. *endiviifolia* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 127, 1951 (Herzog 1951), syn. fide Swails (1970). Lectotype (Swails 1970: 212): Costa Rica, San José, near Santa Maria de Dota, 1,500–1,800 m, 14–26 Dec 1925, *Standley 42374*, *hb. Herzog* (JE-04001320 https://je.jacq.org/JE04001320, isolectotypes US-00072952 http://n2t.net/ark:/65665/3f47db749-f76c-40e4-907c-67c176bf6ec8).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,350 m, Jul 1906, *Türckheim* (NY, **So 2005**).

COSTA RICA. S. loc. (Fulford and Sharp 1990). SAN JOSÉ: Dota cantón, San Gerardo, Río Savegre, 2,400 m, 10 Nov 1999, *Holz CR 99-545* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 42374* (JE-04001320 https://je.jacq.org/JE04001320, US-00072952, B22084, M-0063707, **TYPE** of *Madotheca subciliata* var. *endiviifolia*, **Herzog 1951** as *Madotheca subciliata* var. '*endiviaefolia*'; **Swails 1970**; **Geissler and Bischler 1985** as *Madotheca subciliata* var. *endiviifolia*; **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**; **So 2005**).

PANAMA. S. loc. (Fulford and Sharp 1990; Fuertes and Prada 2020). CHIRIQUÍ: Boquete, 3–5 Sep 1940, *Svihla 40-408*, *40-423* (**Clark and Svihla 1944c** as *Porella arborea*; **Swails 1970**; **Stotler et al. 1998** as *Porella crispata* var. *crispata*); David, *Hélion* (NY, PR, **Swails 1970**; **Stotler et al. 1998** as *Porella crispata* var. *crispata*; **So 2005**); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34711* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′54.0″N, 82°34′33.9″W, 2,038 m, 11 Aug 2017, *Guerra* (**Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.67′N, 82°42.85′W, 1,220 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34692* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Porella leiboldii (Lehm. et Lindenb.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

≡*Madotheca leiboldii* Lehm. et Lindenb., *Nov. Stirp. Pug.* 8: 11, 1844 (Lehmann 1844). Type: Mexico.

=*Madotheca liebmaniana* Lindenb. et Gottsche, *Syn. Hepat.* 1: 731, 1844 (Gottsche et al. 1844), syn. in So (2005). Type: Mexico.

≡*Porella liebmaniana* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 408, 1877 (Trevisan 1877).

=*Madotheca alpina* Lindenb. et Gottsche, *Syn. Hepat.* 5: 732 (Gottsche et al. 1847), syn. in So (2005). Type: Mexico.

≡*Porella alpina* (Lindenb. et Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

=*Madotheca muenchiana* Steph., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 85: 264, 1910 (Stephani 1910b), syn. with *Porella liebmaniana* fide Swails (1970). Type: Mexico.

=*Madotheca maxonii* Herzog, *Beih. Bot. Centralbl.* 61B(3): 569, 1942 (Herzog 1942b), syn. in So (2005). Lectotype (Swails 1970: 229 as "type") or possibly holotype: Costa Rica, Vara Blanca, 1,600–1,700 m, 22 Jul 1923, *Maxon & Harvey 8277* (JE-04001321 https://je.jacq.org/JE04001321).

≡*Porella maxonii* (Herzog) Swails, *Nova Hedwigia* 19: 228, 1970 (Swails 1970).

=*Madotheca swartziana* (F.Weber) Lindenb. var. *decurrenti-spinulosa* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 128, 1951 (Herzog 1951), syn. with *Porella maxonii* fide Swails (1970). Lectotype (Swails 1970: 229): Costa Rica: Prov. Cartago, La Estrella, on tree, *Standley 39553* (JE-04010855 https://je.jacq.org/JE04010855).

GUATEMALA. S. loc. (Fulford and Sharp 1990; Linares and Uribe 2002); S. loc., 1841, *Friedrichstahl* (W, **So 2005**). ALTA VERAPAZ: Cobán, *Türckheim* (FH, G, **So 2005**); Rio Carcha, 1,360 m, *Standley 90724* (F, **Swails 1970**). IZABAL: Livingstone municipio, above Rio Frio, 7,700 ft (2,347 m), *Sharp 302* (TENN, **Swails 1970**). SAN MARCOS: S. loc., 3,800–4,000 m, *Steyermark 35901* (NY, **Swails 1970**; **Freire 2006**; **Pérez 2009**).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b** also as *Porella liebmaniana*; Holz 2006 also as *Porella liebmaniana*); S. loc. (Cole 1982, 1983 as *Porella liebmaniana*; Geissler and Bischler 1989 as *Porella maxonii*; **Fulford and Sharp 1990** as *Porella maxonii* and *Porella liebmaniana*; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009); S. loc., *Holz CR 99-539*

(GOET, **Hentschel et al. 2007a**); S. loc., *Schäfer-Verwimp & Holz SV/H-0021* (GOET, **Heinrichs et al. 2007**; **Hentschel et al. 2007a**). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley & Torres 47747* (hb. Herzog, **Swails 1970** as *Porella maxonii*; **Morales 1991** as *Porella maxonii*); Alajuela cantón, Viento Fresco, *Standley 47747* (B21453, **Dauphin 2005** as *Porella maxonii*); Alajuela cantón, Viento Fresco, *Standley 47921* (**Herzog 1951** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Geissler and Bischler 1985** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Dauphin 2005** as *Porella maxonii*). CARTAGO: La Estrella, *Standley 39180* (**Swails 1970** as *Porella maxonii*; **Morales 1991** as *Porella maxonii*; **Dauphin 2005** as *Porella maxonii*); La Estrella, Mar 1924, *Standley 39553* (JE, M-0063409, **TYPE** of *Madotheca swartziana* var. *decurrenti-spinulosa*, **Herzog 1951** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Swails 1970** as *Porella maxonii*; **Geissler and Bischler 1985** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Morales 1991** as *Porella maxonii*; **Dauphin 2005** as *Porella maxonii*). HEREDIA: Heredia cantón, Vara Blanca, between Poás and Barba volcanoes, 1,600–1,700 m, 22 Jul 1918, *Maxon & Harvey 8277* (JE-04001321 https://je.jacq.org/JE04001321, **TYPE** of *Madotheca maxonii*, **Herzog 1942b, 1951**, both as *Madotheca maxonii*; **Swails 1970** as *Porella maxonii*; **Geissler and Bischler 1985** as *Madotheca maxonii*; **Morales 1991** as *Porella maxonii*; **Dauphin 2005** as *Porella maxonii*; **So 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50312* (hb. Herzog, **Herzog 1951** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Swails 1970** as *Porella maxonii*; **Geissler and Bischler 1985** as *Madotheca swartziana* var. *decurrenti-spinulosa*; **Morales 1991** as *Porella maxonii*; **Dauphin 2005** as *Porella maxonii*); San Isidro cantón, Yerba Buena, 2,000 m, *Standley & Valerio 49187* (hb. Herzog, **Swails 1970** as *Porella maxonii*; **Morales 1991** as *Porella maxonii*; **Dauphin 2005** as *Porella maxonii*). PUNTARENAS: Monteverde (Morales 1991 as *Porella liebmaniana*); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 71* (R, **Reed and Robinson 1971** as *Porella liebmaniana*; **Dauphin 2005** as *Porella liebmaniana*). SAN JOSÉ: Cordillera de Talamanca, 1,400–1,450 m, 27 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0227* (hb. Schäfer-Verwimp, **So 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** also as *Porella liebmaniana*); Dota cantón, El Jardín, *Morales 294* (FLAS, USJ, **Kappelle 1996**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005 also as *Porella liebmaniana*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** also as *Porella liebmaniana*); Dota cantón, Santa María, 1,500–1,600 m, *Standley & Valerio 43157* (hb. Herzog, US, **Swails 1970** as *Porella liebmaniana*; **Morales 1991** as *Porella liebmaniana*; **Kappelle 1996** as *Porella liebmaniana*; **Dauphin 2005** as *Porella liebmaniana*); Dota cantón, Santa María, 1,500–1,800 m, *Standley 43157* (**Herzog 1951** as *Madotheca* '*m*ünchiana'); en el área de la Cueva de Altamira, *Chaverri et al. 1242*, det. Griffin (FLAS, **Morales 1991**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34116*, *34129* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: S. loc. (Schäfer-Verwimp 2014); Maríato distrito, Cerro Hoya, 440 m, 27 Apr 1997, *Cuadra & Flores 5* (GOET, **So 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America.

Porella swartziana (F.Weber) Trevis. *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

≡*Jungermannia swartziana* F.Weber, *Hist. Musc. Hepat. Prodr.*: 18, 1815 (Weber 1815). Type: Jamaica.

≡*Madotheca swartziana* (F.Weber) Lehm., *Pugillus* 7: 10, 1838 (Lehmann 1838).

=*Madotheca complanata* Steph., *Sp. Hepat. [Stephani]* 4: 219, 1910 (Stephani 1910a), syn. fide Schultze-Motel and Menzel (1987). Type: Venezuela.

≡*Porella complanata* (Steph.) Swails, *Nova Hedwigia* 19: 219, 1970 (Swails 1970).

=*Madotheca swartziana* (F.Weber) Lehm. var. *guatemalensis* Herzog, *Beih. Bot. Centralbl.* 61B(3): 570, 1942 (Herzog 1942b), syn. fide Swails (1970). Lectotype (Swails 1970: 218 as "type"): Guatemala, Petén: Fallabon–Yaxhá Road, 23 Mar 1933, *Lundell 2052* (JE-04001294 https://je.jacq.org/JE04001294).

=*Porella sharpii* Swails, *Nova Hedwigia* 19: 243, 1970 (Swails 1970), syn. fide So (2005). Type: Mexico.

GUATEMALA. S. loc. (Schuster 1980d; Fulford and Sharp 1990 also as *Porella sharpii*; Rivera et al. 2006; Fuertes and Prada 2020); S. loc., *Gorman* (NY, **Freire 2006**). ALTA VERAPAZ: S. loc., *Steyermark 44298* (hb. Fulford, **Crandall 1969**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,060 m, *Pérez 92* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). CHIQUIMULA: Ipala municipio, Volcán Ipala, *Steyermark 30595* (F, **Swails 1970**; **Freire 2006**; **Pérez 2009**). EL PETÉN: Camino Fallabon–Yaxhá, *Lundell 2052* (hb. Herzog, **Swails 1970**; **Freire 2006**); Fallabon–Yaxhá Road, *Lundell 2066* (**Herzog 1942b** as *Madotheca swartziana* var. *guatemalensis*; **Geissler and Bischler 1985** as *Madotheca swartziana* var. *guatemalensis*); San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011**). HUEHUETENANGO: Todos Santos Cuchumatán municipio, Chinhuitz, 15°30′40″N, 91°38′56″W, *Pérez 1186* (USCG, Pérez 2009). QUETZALTENANGO: Zunil municipio, Aguas Amargas, 2,450 m, *Standley 81362* (F, **Swails 1970**); Zunil municipio, Aguas Amargas, 2,450 m, *Standley 83362* (F, **Freire 2006**; **Pérez 2009**). QUICHÉ: S. loc., *Pérez 2335* (USCG, Pérez 2009); abajo del Rio Juarco, 5,700 ft (1,737 m), *Sharp 2411* (TENN, **Swails 1970** as *Porella sharpii*; **Freire 2006** as *Porella sharpii*; **Pérez 2009** as *Porella sharpii*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (Schuster 1980d; Fulford and Sharp 1990). CAYO: S. loc. (Whittemore and Allen 1996); S. loc., *Mains 3814*, *3815*, *3831*, *3857*, *3876* (NY, **Swails 1970**).

HONDURAS. S. loc. (Rivera et al. 2006; Fuertes and Prada 2020). LEMPIRA: Gracias municipio, Montaña de Celaque, 1,900 m, 15 May 1992, *Allen 12173* (GOET, **So 2005**).

COSTA RICA. S. loc. (Cole 1982, 1983, both as *Porella sharpii*; Fuertes and Prada 2020); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: La Estrella, Mar 1924, *Standley 39553* (JE, M-0063409, **So 2005**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Griffin et al. D209*, *D223* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, along South Line, 16 Mar 1969, *James, W. 1969-83* (R, **Reed and Robinson 1971**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, *Gradstein 9461*, *9477*, *9493* (GOET, **Dauphin 2005**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 42b*, *72* (R, **Reed and Robinson 1971**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, El Jardín, *Morales 294* (FLAS, USJ, **Morales 1991** as *Porella complanata*; **Kappelle 1996** as *Porella complanata*; **Dauphin 2005** as *Porella complanata*); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, 1,950 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0088* (hb. Schäfer-Verwimp, **So 2005**).

PANAMA. S. loc. (Stephani 1910a as *Madotheca swartziana*; Pagán 1939c; Clark and Svihla 1944a; Frye and Clark 1946; Schuster 1980d; Fulford and Sharp 1990 as *Porella complanata*; Stotler et al. 1998). CHIRIQUÍ: Boquete distrito, Bois de Boquete, Nov 1906, *Hélion 86* (**So 2005**); Camino Los Indios, between Estrella Arriba and La Hacienda, *Salazar Allen & Wilson 1259*, *1261* (PMA, **Stotler et al. 1998** as *Porella complanata*); David, *Hélion* (NY, PR, **Swails 1970** as *Porella complanata*; **Stotler et al. 1998** as *Porella complanata*); Tierras Altas distrito, Cerro Punta, *Croat 16133* (MO, **Stotler et al. 1998**); Tierras Altas distrito, Cerro Punta, Alto de Pineda, 8,000–8,400 ft (2,438–2,560 m), *Salazar Allen 1091* (PMA, **Stotler et al. 1998** as *Porella complanata*); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020** as *Porella complanata*); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022** as *Porella complanata*).

Also reported from Southern Africa, Indo-China, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Prionolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 127, 1893 (Schiffner 1893a).

Prionolejeunea aemula (Gottsche) A.Evans, *Bull. Torrey Bot. Club* 31(4): 219, 1904 (Evans 1904).

≡*Lejeunea aemula* Gottsche, *Syn. Hepat.* 3: 338, 1845 (Gottsche et al. 1845a). Type: St. Kitts.

GUATEMALA. ALTA VERAPAZ: S. loc., 1,500–1,600 m, 21 Jul 1977, *Croat 41772b* (GOET, JE, **Ilkiu-Borges 2006, 2016**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**). QUICHÉ: S. loc., *Pérez 2341* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (Ilkiu-Borges 2016). CAYO: S. loc., Dec 1993, *Allen 15091* (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., Dec 1993, *Allen 15295B*, *15308B*, *15501* (BRH, MO, **Whittemore and Allen 1996**).

COSTA RICA. LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0294/A* (hb. Schäfer-Verwimp, **Ilkiu-Borges 2006, 2016**); Pococí cantón, Braulio Carrillo National Park, Botarrama, 450 m, 19 Apr 2001, *Dauphin 2955* (NY, **Ilkiu-Borges 2006, 2016**). PUNTARENAS: Coto Brus cantón, Cerro Paraguas, Fila Cruces, 1,410–1,520 m, Aug 1995, *Dauphin 1801* (GOET, **Ilkiu-Borges 2006, 2016**).

PANAMA. ?CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (Salazar Allen et al. 2021 as *Prionolejeunea* cf. *aemula*). Note: We are not aware of any positively identified specimen from Chiriquí. COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital, 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30771*, *30773 p.p.*, *30788* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34190/A* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 665*, *715* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9294* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Chepigana distrito, NE slope of Summit Cerro Sapo, approach from Garachiné, 1,100 m, 8 May 1979, *Hammel 7265* (GOET, **Ilkiu-Borges 2006, 2016**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, entering Las Nubes, 1,000 m, 12 Jun 1991, *Salazar Allen & Gradstein 9403* (PMA, GOET, **Stotler et al. 1998**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Prionolejeunea ampliretis Herzog, *Feddes Repert. Spec. Nov. Regni Veg.* 57(1/2): 178, 1955 (Herzog 1955a). Type: Colombia.

***NICARAGUA.** *ATLÁNTICO SUR: Nueva Guinea municipio, road from Rio Blanco to Rio Copalar, 12°55′N, 85°05′W, 200–400 m, 13 Feb 1979, *Stevens 12050 p.p.*, det. Dauphin May

2017 (MO-6699911! http://tropicos.org/specimen/100988666, **this publication**).

PANAMA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Hernández-Rodríguez 796*, det. Hernández-Rodríguez Aug 2017 (PMA, **this publication**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34238/B* (JE, **Schäfer-Verwimp 2014**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 20 Mar 1996, *Reiner-Drehwald 960121* (GOET, **Ilkiu-Borges 2006, 2016**).

Also reported from the Caribbean, Northern South America, Western South America.

Prionolejeunea clementinae Ilk.-Borg., G.Dauphin et N.Salazar, *Nova Hedwigia* 106(1/2): 66, 2018 (Ilkiu-Borges et al. 2018). Holotype: Panamá, Distrito La Pintada, Corregimiento El Copé, P. N. General de División Omar Torrijos Herrera, Sendero Cuerpo de Paz, Transecto #2, UTM: 17 P, 545027 E 958212 N, 696 m, on *Ficus* tree, 1 m from the ground, in exposed site, 31 Jul 2012, *Dauphin & Gudiño L. 4442* (holotype PMA, isotype MG).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2012, *Dauphin & Gudiño 4442* (PMA, MG, **Ilkiu-Borges et al. 2018**; **Söderström et al. 2020**); La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2012, *Dauphin & Gudiño 4445* (PMA, MG, **Ilkiu-Borges et al. 2018**).

Not found outside Central America.

Prionolejeunea decora (Taylor) Steph., *Sp. Hepat. (Stephani) 5*: 207, 1913 (Stephani 1913).

≡*Lejeunea decora* Taylor, *London J. Bot.* 5: 393, 1846 (Taylor 1846a). Type: Dominica.

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56369 p.p.* (JE, **Ilkiu-Borges 2006, 2016**).

COSTA RICA. *GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Orosi, Sendero Casafrán, 11°00′00″N, 83°33′00″W, 10 Jun 1996, *Dauphin & Valdelomar 2511*, det. Dauphin Dec 2020 (CR-151109!, **this publication**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama, 450 m, 19 Apr 2001, *Dauphin 2955* (NY, **Ilkiu-Borges 2006, 2016**). PUNTARENAS: Monteverde cantón, Campbell's Wood, 1,500 m, 1990, *Sillett* (GOET, **Ilkiu-Borges 2006, 2016**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, Nov 1993, *Gradstein 9528* (GOET, **Ilkiu-Borges 2006, 2016**).

PANAMA. S. loc. (Lavocat Bernard et al. 2009). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Gualaca distrito, Reserva Forestal La Fortuna, Hornito, Sendero Quebrada Alemán, 1,100–1,200 m, 16 Mar 1996, *Reiner-Drehwald 960064* (GOET, **Ilkiu-Borges 2006, 2016**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34153/A* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34183*, *34200*, *34212*, *34219*, *34247*, *34253/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, 700–750 m, 17 Nov 1985, *Brako 8474* (NY, **Ilkiu-Borges 2006, 2016**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre, from camping site of Rancho Mojado, 1,000 m, 1991, *Salazar Allen & Gradstein 9259b* (JE, **Ilkiu-Borges 2006, 2016**). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Cerro Jefe, entering Las Nubes, 1,000 m, 12 Jun 1991, *Salazar Allen & Gradstein 9403* (PMA, GOET, **Ilkiu-Borges 2006, 2016**); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 20 Mar 1996, *Reiner-Drehwald 960117*, *960122*, *960139* (GOET, **Ilkiu-Borges 2006, 2016**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30837*, *30852* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil(?).

Prionolejeunea denticulata (F.Weber) Schiffn., *Hepat. (Engl.-Prantl)*: 127, 1893 (Schiffner 1893a).

≡*Jungermannia denticulata* F.Weber, *Hist. Musc. Hepat. Prodr.*: 30, 1815 (Weber 1815). Type: "Patria ignota" (Jamaica?).

=*Lejeunea microdonta* Gottsche, *Syn. Hepat.* 3: 337, 1845 (Gottsche et al. 1845a), syn. fide Ilkiu-Borges (2006). Type: West Indies.

≡*Prionolejeunea microdonta* (Gottsche) Steph., *Bull. Herb. Boissier* 5(10): 842, 1897 (Stephani 1897a), syn. fide Ilkiu-Borges in Dauphin (2005).

=*Lejeunea macrocardia* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 158, 1884 (Spruce 1884), syn. fide Ilkiu-Borges (2006). Type: Peru.

≡*Prionolejeunea macrocardia* (Spruce) Steph., *Sp. Hepat. (Stephani) 5*: 198, 1913 (Stephani 1913).

=*Lejeunea angulistipa* Prantl, *Hedwigia* 29: XIV, 1890 (Prantl 1890), syn. fide Grolle (1984b). Type: West Indies.

≡*Cyclolejeunea angulistipa* (Prantl) A.Evans, *Bull. Torrey Bot. Club* 31(4): 203, 1904 (Evans 1904).

=*Prionolejeunea aequitexta* A.Evans, *Bull. Torrey Bot. Club.* 31(4): 217, 1904 (Evans 1904), syn. fide Ilkiu-Borges in Dauphin (2005). Type: Puerto Rico.

=*Prionolejeunea innovata* A.Evans, *Bull. Torrey Bot. Club.* 31(4): 217, 1904 (Evans 1904), syn. fide Ilkiu-Borges in Dauphin (2005). Type: Puerto Rico.

GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Prionolejeunea* cf. *denticulata*). Note: We do not know of any positively identified specimen from Alta Verapaz. IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez

2007 as *Prionolejeunea* aff. *denticulata*). Note: We do not know of any positively identified specimen from Izabal. QUICHÉ: S. loc., *Pérez 2331* (USCG, Pérez 2009).

***BELIZE.** *TOLEDO: Columbia River Forest Reserve, Camp 1, 16°22′59″N, 89°07′18″W, 705 m, 12 Feb 1997, *Allen 18622*, det. Dauphin Jun 2017 (MO-5228085! http://tropicos.org/specimen/90101515, **this publication**).

HONDURAS. S. loc. (Lücking 1995; Ilkiu-Borges 2000). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56369 p.p.* (JE, **Herzog 1951**).

***NICARAGUA.** *GRANADA: Granada municipio, Volcán Mombacho, 8 Jun 1981, *Heinrichs 186 p.p.*, det. Dauphin May 2017 (MO-6699905! http://tropicos.org/specimen/100988675, **this publication**).

COSTA RICA. S. loc. (Ilkiu-Borges 2000; Schäfer-Verwimp and Pócs 2009). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Norris 109995* (UC-2053900, **Norris et al. 2017**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Cacao, *Espinoza 38.1* (CR, **Dauphin 2005**); Liberia cantón, Guanacaste National Park, Sector Pitilla, Cerro Orosilito, *Dauphin 2559*, det. Dauphin (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 92-189* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-294* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-189* (hb. Lücking, USL, **Lücking 1995** as *Prionolejeunea aequitexta*; **Dauphin et al. 1998** as *Prionolejeunea aequitexta*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-121*, *92-122*, *92-123*, *etc.* (hb. Lücking, **Lücking 1995** also as *Prionolejeunea aequitexta*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** also as *Prionolejeunea aequitexta*); Pococí cantón, Braulio Carrillo National Park, near the entrance, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0304/B*, *SV/H-0308/B* (JE, **Ilkiu-Borges 2006, 2016**); Pococí cantón, Guápiles, 300–500 m, *Standley 37486a* (JE, **Herzog 1951** as *Prionolejeunea innovata*; **Morales 1991** as *Prionolejeunea innovata*; **Dauphin 2005**; **Ilkiu-Borges 2006** as *Prionolejeunea innovata*, **2016**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Osa cantón, Rincón, trail Boscosa-Cerro Chocuaco, 450 m, Oct 1993, *Gradstein & Dauphin 9320*, *9324* (GOET, **Ilkiu-Borges 2006, 2016**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34188*, *34190/B* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 664*, *667*, *672*, *674*, *681*, *687*, *688*, *691 p.p.*, *692*, *693*, *722 p.p.*, *728*, *729*, *733*, *747.3 p.p.*, *824 p.p.* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998 as *Prionolejeunea macrocardia*); Cerro Pirre, 800–1,150 m, 5 Jun 1991, *Salazar Allen & Gradstein 9258* (GOET, **Ilkiu-Borges 2006, 2016**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Prionolejeunea macrocardia*); Estación Pirre, base of Cerro Pirre, 100 m, 7 Jul 1991, *Salazar Allen & Gradstein 9225* (PMA, GOET, JE, **Stotler et al. 1998** as *Prionolejeunea macrocardia*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Salazar Allen & Gradstein 15086* (PMA, **Stotler et al. 1998** as *Prionolejeunea macrocardia*). PANAMA: S. loc. (Schäfer-Verwimp 2014); Panamá distrito, Parque Nacional Soberanía, Sendero "Camino de Cruces," 0–50 m, 12 Mar 1996, *Reiner-Drehwald 960025* (GOET, **Ilkiu-Borges 2006, 2016**).

COCOS I. S. loc. (Ilkiu-Borges 2000, 2016); S. loc., *Dauphin 965* (USJ, Dauphin 1999 as *Prionolejeunea* cf. *innovata*); S. loc., *Gómez-Pignataro 3345B*, det. G. Dauphin and A. Ilkiu-Borges Sep 2020 (F!, CR!, **this publication**); Cerro Pelón, 5°32′57″N, 87°03′56″W, 500 m, 14 Feb 1994, *Dauphin A-7*, det. M. I. Morales (USJ, **Dauphin 1995** as *Cyclolejeunea angulistipa*, **1999**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 540 m, 21 Jan 1990, *Dauphin 983*, det. G. Dauphin Apr 2021 (USJ-47643!, CR-4468402!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 14 Feb 1994, *Dauphin 965*, det. M. I. Morales (USJ, Dauphin 1995 as *Prionolejeunea* cf. *innovata*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, *Lücking 92-295* (USJ, **Gradstein et al. 1994**; **Dauphin 1995, 2005**); Río Genio, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-295* (hb. Lücking, **Lücking 1995**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Prionolejeunea galliotii Steph. *Sp. Hepat. [Stephani]* 6: 388, 1923 (Stephani 1923). Type: French Guiana.

PANAMA. PANAMA: Panamá distrito, Parque Nacional Soberanía, Sendero "Camino de Cruces," 0–50 m, Mar 1996, *Reiner-Drehwald 960026* (GOET, **Ilkiu-Borges 2006, 2016**; **Heinrichs et al. 2014c**).

COCOS I. Chatham Bay, 1964, *Weber B-14295* (JE, **Ilkiu-Borges 2006, 2016**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Prionolejeunea mucronata (Sande Lac.) Steph., *Hedwigia* 35(3): 119, 1896 (Stephani 1896).

≡*Lejeunea mucronata* Sande Lac., *Syn. hepat. jav.*: 106, 1857 (Sande Lacoste 1856). Type: Venezuela.

GUATEMALA. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Dauphin et al. 2015). CARTAGO: Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m,

6–7 Mar 1926, *Standley 50905a* (JE-04001277 https://je.jacq.org/JE04001277, JE-04001278, B-300025820, S-B72010, **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 500 m, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0287* (M, hb. Schäfer-Verwimp, **Ilkiu-Borges 2006, 2016**; **Heinrichs et al. 2014c**); Pococí cantón, Braulio Carrillo National Park, Botarrama, 450 m, 19 Apr 2001, *Dauphin 2955* (NY, **Ilkiu-Borges 2006, 2016**). PUNTARENAS: Monteverde (Morales 1991); Monteverde, 10 Jan 1965, *James, M. 34*, *80* (US, R, **Reed and Robinson 1971**; **Dauphin 2005**; **Ilkiu-Borges 2006, 2016**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 34b*, *50a*, *69*, *108* (R, US, **Reed and Robinson 1971**; **Dauphin 2005**; **Ilkiu-Borges 2006, 2016**).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4499* (PMA, **Dauphin et al. 2015**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 666*, *672*, *715*, *722 p.p.* (PMA, **Sierra et al. 2019a**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Prionolejeunea muricatoserrulata (Spruce) Steph., *Sp. Hepat. [Stephani]* 5: 223 (Stephani 1913).

≡*Lejeunea muricatoserrulata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 155, 1884 (Spruce 1884). Type: Brazil.

=*Prionolejeunea mucronata* f. *minutissima* Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 141, 1951 (Herzog 1951), syn. fide Ilkiu-Borges (2006). Lectotype (Söderström and Hentschel 2023: 22): Costa Rica, Cartago, El Muñeco, Rio Navarro, 1,400–1,500 m, *Standley & Torres 50905a* (JE-04001277 https://je.jacq.org/JE04001277, isolectotypes JE-04001278 https://je.jacq.org/JE04001278, B-300025820 https://herbarium.bgbm.org/object/B300025820, S-B72010 https://herbarium.nrm.se/specimens/B72010).

BELIZE. TOLEDO: Punta Gorda, 1932, *Dodge 59* (JE, **Ilkiu-Borges 2006, 2016**).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, base of N slope of Pico Bonito, 15°42′N, 86°51′W, 140 m, 8 May 1993, *Liesner & Meijia 26009 p.p.*, det. Dauphin 2017 (MO-6699932! http://tropicos.org/specimen/801656, **this publication**).

COSTA RICA. CARTAGO: Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, *Standley & Torres 50905a* (JE, B, S-B72010, **Ilkiu-Borges 2006, 2016**); Cartago cantón, El Muñeco, Río Navarro, 1,400–1,500 m, 6–7 Mar 1926, *Standley 50905a* (JE-04001277 https://je.jacq.org/JE04001277, JE-04001278, B-300025820, S-B72010, **TYPE** of *Prionolejeunea mucronata* f. *minutissima*, **Herzog 1951** as *Prionolejeunea mucronata* f. *minutissima*). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-198*, *92-199*, *92-241*, *92-421*, *92-464*, *92-580* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**). SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51801 p.p.* (B, JE, **Herzog 1951**; **Morales 1991**; **Dauphin 2005**; **Ilkiu-Borges 2006, 2016**).

PANAMA. S. loc. (Lücking 1995). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Estación Pirre, base of Cerro Pirre, 100 m, 7 Jul 1991, *Salazar Allen & Gradstein 9225* (PMA, GOET, JE, **Ilkiu-Borges 2006, 2016**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15082* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, ~150 m, Oct 1993, *Gradstein & Salazar Allen 15086*, *15098* (JE, **Ilkiu-Borges 2006, 2016**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3090* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Lutz tower, 2003, *Dauphin 3085* (CR, PMA, **Dauphin et al. 2022**).

COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 978 p.p.*, det. G. Dauphin Apr 2021 (USJ-47536!, CR-4468413!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-291* (hb. Lücking, **Lücking 1995**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Prionolejeunea scaberula (Spruce) Steph., *Sp. Hepat. [Stephani]* 5: 214, 1913 (Stephani 1913).

≡*Lejeunea scaberula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 159, 1884 (Spruce 1884). Type: Brazil.

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34153/C* (JE, **Schäfer-Verwimp 2014**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15087* (**Dauphin et al. 2022**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Prionolejeunea schlimiana (Gottsche) Steph., *Sp. Hepat. [Stephani]* 5: 214, 1913 (Stephani 1913).

≡*Lejeunea schlimiana* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 154, 1864 (Gottsche 1864). Type: Colombia.

COSTA RICA. S. loc., *Dauphin 2115* (GOET, **Heinrichs et al. 2014c**). ALAJUELA: Río Cuatre cantón, Laguna Hule, 700 m, 12 Jan 1996, *Dauphin & Gonzáles 2115* (GOET, **Ilkiu-Borges 2006, 2016**). PUNTARENAS: Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Reserva Biologica Monteverde, 1,550 m, Nov 1993, *Gradstein 9417*, *9460*, *9528*, *9536*, *9552* (GOET, U,

USJ, **Gradstein et al. 1994**; **Dauphin 2005**; **Ilkiu-Borges 2006, 2016**); Monteverde, 1,550 m, *Gradstein & Solano 9460* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34503* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34185*, *34194*, *34218/C* (JE, **Schäfer-Verwimp 2014**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 673*, *716* (PMA, **Sierra et al. 2019a**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Chepigana distrito, Cerro Sapo, 762 m, 1 Feb 1978, *Hammel 1248* (GOET, **Ilkiu-Borges 2006, 2016**). PANAMA WEST: Capira distrito, Altos de Campana National Park, Sendero de Interpretación, 850 m, 13 Jul 1991, *Salazar Allen & Gradstein 9449* (GOET, **Ilkiu-Borges 2006, 2016**). PANAMA: Panamá distrito, La Eneida, Cerro Jefe region, 750 m, 12 Jan 1972, *Maas & Dressler 692a* (GOET, **Ilkiu-Borges 2006, 2016**). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34313/B* (JE, **Schäfer-Verwimp 2014**).

Also reported from Northern South America, Western South America.

Prionolejeunea trachyodes (Spruce) Steph., *Sp. Hepat. [Stephani]* 5: 215, 1913 (Stephani 1913).

≡*Lejeunea trachyodes* Spruce, *J. Linn. Soc., Bot.* 30(210): 338, 1895 (Gepp 1895). Type: Dominica.

COSTA RICA. LIMÓN: Pococí cantón, Braulio Carrillo National Park, near park entrance, 10°06.9′N, 83°58.4′W, 500, 29 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0283/A* (CR, JE, **Ellis et al. 2014a**).

PANAMA. S. loc. (Bastos and Ilkiu-Borges 2011; Ellis et al. 2014a; Fagundes et al. 2016; Lavocat Bernard and Reeb 2016; Lavocat Bernard 2018; Gradstein 2021); S. loc., *Schäfer-Verwimp & Verwimp 30778* (M, **Heinrichs et al. 2014c**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30778* (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9267* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); INRENARE station, foothills of Cerro Pirre, 800–1,150 m, 1991, *Salazar Allen & Gradstein 9267* (PMA, JE, **Ilkiu-Borges 2006, 2016**; **Stotler et al. 1998**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Pseudocephalozia R.M.Schust., *Nova Hedwigia* 10(1/2): 21 (Schuster 1965).

Pseudocephalozia quadriloba (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 36: 371, 1973 (Schuster 1972).

≡*Isotachis quadriloba* Steph., *Bih. Kongl. Svenska Vetensk.-Akad. Handl.* 26(III, 6): 54, 1900 (Stephani 1900c). Type: Chile.

COSTA RICA. S. loc. (Gradstein et al. 1977; Engel 1978, 1990; Hässel and Solari 1985; Gradstein 1999a; Gradstein et al. 2001b; Dauphin 2005; Gradstein and Holz 2005; Benitez et al. 2013; Váňa and Engel 2013; Burghardt 2019; Gradstein 2021); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Poás (Schuster 1990); Poás cantón, Poás Volcán between crater and lagoon, 2,600 m, *Engel 8957*, *8969* (F, **Schuster and Engel 1974**); Poás National Park (Gradstein et al. 1994; Dauphin 2005); Poás Volcano, 2,600 m (**Engel and Glenny 2008**); Poás Volcano, vicinity of crater, 2,600 m, *Schuster RMS 71-198*, *71-199* (hb. Schuster, **Schuster and Engel 1974**; **Schuster 2000c**).

Also reported from Northern South America, Western South America, Southern South America, Subantarctic Islands.

Pseudomarsupidium Herzog, *Svensk Bot. Tidskr.* 47(1): 42, 1953 (Herzog 1953).

Pseudomarsupidium decipiens (Hook.) Grolle, *Trans. Brit. Bryol. Soc.* 4(3): 443, 1963 (Grolle 1963c).

≡*Jungermannia decipiens* Hook., *Brit. Jungermann.*: tab. 50, 1813 (Hooker 1813). Type: Ireland.

≡*Adelanthus decipiens* (Hook.) Mitt., *J. Proc. Linn. Soc., Bot.* 7(28): 244, 1864 (Mitten 1864).

=*Adelanthus crossii* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 404, 1885 (Spruce 1885), syn. fide León-Yánez et al. (2006). Type: Colombia.

COSTA RICA. S. loc. (Gradstein et al. 1983 as *Adelanthus decipiens*; Fulford 1987 as *Adelanthus decipiens*; Fulford and Sharp 1990 as *Adelanthus decipiens*; Gradstein 1999a as *Adelanthus crossii*; Paton 1999 as *Adelanthus decipiens*; Gradstein and Holz 2005 as *Adelanthus crossii* and *Adelanthus decipiens*; Váňa and Engel 2013); Cordillera de Talamanca (Holz 2003 as *Adelanthus crossii*, 2006 as *Adelanthus decipiens*; **Holz and Gradstein 2005b** as *Adelanthus crossii* and *Adelanthus decipiens*). ALAJUELA: Poás Volcano, 2,500 m, 1929, *Valerio 80*, det. Herzog as *Adelanthus crossii* Spruce (B-18569, **Herzog 1938** as *Adelanthus crossii*; **Dauphin 2005** as *Adelanthus decipiens*, but this specimen is rejected as *Adelanthus pittieri* by Grolle 1972c); Poás Volcano, 30 Jul 1977, *Griffin & Araya 17* (USJ, FLAS, **Morales and Griffin 1983** as *Adelanthus decipiens*; **Morales 1991** as *Adelanthus decipiens*; **Dauphin 2005** as *Adelanthus decipiens*). PUNTARENAS: S. loc. (**Merwin et al. 2001**

as *Adelanthus decipiens*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Adelanthus decipiens*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Adelanthus decipiens*); Dota cantón, San Gerardo (Dauphin 2005 as *Adelanthus decipiens*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Adelanthus decipiens*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Adelanthus decipiens*); Moravia cantón, La Hondura, *Standley 37825* (JE, **Grolle 1972c** as *Adelanthus decipiens*; **Morales 1991** as *Adelanthus decipiens*; **Dauphin 2005** as *Adelanthus decipiens*).

PANAMA. S. loc. (Váňa and Engel 2013). CHIRIQUÍ: Boquete distrito, Palo Alto, 1,300–1,400 m, *Salazar Allen et al. 751 p.p.* (PMA, **Stotler et al. 1998** as *Adelanthus decipiens*), Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 343* (PMA, **Dauphin 2007** as *Adelanthus decipiens*); Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1569* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Adelanthus crossii*; **Dauphin 2007** as *Adelanthus crossii*).

Also reported from Northern Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Subantarctic Islands.

Pycnolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 124, 1893 (Schiffner 1893a).

Pycnolejeunea contigua (Nees) Grolle, *J. Hattori Bot. Lab.* 45: 179, 1979 (Grolle 1979a).

≡*Jungermannia contigua* Nees, *Fl. Bras. (Martius)* 1(1): 360, 1833 (Nees 1833b). Type: Brazil.

COSTA RICA. S. loc. (**Fulford and Sharp 1990**; Schäfer-Verwimp 1999). CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 46822* (JE, S, **Morales 1991**); Jiménez cantón, Peijivalle, 900 m, 1926, *Standley & Valerio 46822* (JE, **Grolle 1979a**). LIMÓN: Pococí cantón, Guápiles, 300–500 m, 1924, *Standley 37371* (JE-04002681 https://je.jacq.org/JE04002681, **Grolle 1979a**; **Morales 1991**).

PANAMA. COCLÉ: La Pintada distrito, El Copé, 1 Aug 1979, *Meijer 231g*, det. G. Dauphin and N. Salazar Allen (PMA, **Dauphin 2007**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Pycnolejeunea decurviloba Steph., *Hedwigia* 35(3): 125, 1896 (Stephani 1896). Syntypes: Ecuador, Trinidad.

≡*Cheilolejeunea decurviloba* (Steph.) Xiao L.He, *Ann. Bot. Fenn.* 33(1): 51, 1996 (He 1996).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15269* (BRH, MO, **Whittemore and Allen 1996**). *TOLEDO: Columbia River Forest Reserve, from Camp 2 along Little Quartz Ridge spur to spur's summit, 16°23′17″N, 89°05′30″W, 16 Feb 1997, *Allen 18842*, det. Whittemore 1997 (MO-4417196!, **this publication**).

COSTA RICA. S. loc. (León et al. 1998 as *Cheilolejeunea decurviloba*). PUNTARENAS: Osa cantón, Península de Osa, Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9333b* (GOET, U, USJ, **Gradstein et al. 1994**); Osa cantón, Rincón, trail Boscosa-Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9333a* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005** as *Cheilolejeunea decurviloba*).

PANAMA. S. loc. (León et al. 1998 as *Cheilolejeunea decurviloba*). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**). PANAMA: Panamá City, ~1,000 m, 1994, *Gradstein* (**He 1996** as *Cheilolejeunea decurviloba*; **Stotler et al. 1998** as *Cheilolejeunea decurviloba*); Panamá distrito, above Altos de Cerro Azul down toward Río Chagres, 700–850 m, *Allen 9035* (MO, **Stotler et al. 1998** as *Cheilolejeunea decurviloba*); Panamá distrito, Cerro Jefe, ~1,000 m, *Salazar Allen & Gradstein 9385* (B-573682, G-417124, **He 1996** as *Cheilolejeunea decurviloba*; **Stotler et al. 1998** as *Cheilolejeunea decurviloba*); Panamá distrito, Cerro Jefe, 4 Jan 1970, *Lewis 7607*, det. Dauphin Jun 2017 (MO-5243723!, **this publication**).

COCOS I. S. loc., *Dauphin 1068* (USJ, **Dauphin 1999** as *Cheilolejeunea decurviloba*); S. loc., 0–100 m, Apr 1964, *Itow 7* (COLO, U-540267, B, JE, **Gradstein et al. 1994**; **He 1996** as *Cheilolejeunea decurviloba*); trail to Cerro Yglesias, 250 m, *Lücking 92-311* (USJ, **Gradstein et al. 1994**; **Dauphin 1995, 2005** as *Cheilolejeunea decurviloba*); Yglesias E, 500–634 m, Apr 1992, *Lücking 312, 313, 314* (USJ, **Bernecker-Lücking 2000** as *Cheilolejeunea decurviloba*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Pycnolejeunea densistipula (Lehm. et Lindenb.) Steph., *Sp. Hepat. (Stephani)* 5: 602, 1914 (Stephani 1914).

≡*Lejeunea densistipula* Lehm. et Lindenb., *Nov. Stirp. Pug.* 7: 20, 1838 (Lehmann 1838). Type: Peru.

=*Pycnolejeunea parvilobula* Herzog ex Zwickel, *Beih. Bot. Centralb.* 49: 600, 1932 (Zwickel 1932), syn. fide He (1999: 25). Lectotype (He 1999: 180): Costa Rica, vicinity of Guápiles, province of Limón, altitude 300–500 m, 12–13 Mar 1924, *Standley 37371* (JE-040002681 https://je.jacq.org/JE04002681, isolectotype US-00072846 http://n2t.net/ark:/65665/36b171d03-37a9-4bb8-9f3f-16ba47cb08e2).

≡*Pycnolejeunea densistipula* var. *dubia* Herzog, *Rev. Bryol. Lichénol.* 20: 165, 1951 (Herzog 1951), syn. fide He (1999).

COSTA RICA. S. loc. (Schäfer-Verwimp 2014). CARTAGO: Jiménez cantón, Peijivalle, 900 m, *Standley 46822* (JE, S, **Zwickel 1932** as *Pycnolejeunea parvilobula*; **Herzog 1951** as *Pycnolejeunea densistipula* var. *dubia*; **Geissler and Bischler 1989** as

Pycnolejeunea densistipula var. *dubia* and *Pycnolejeunea parvilobula*; **He 1999**; **Dauphin 2005**). LIMÓN: Pococí cantón, Guápiles, 300–500 m, 1924, *Standley 37371* (JE-04002681 https://je.jacq.org/JE04002681, **TYPE** of *Pycnolejeunea parvilobula*, **Zwickel 1932** as *Pycnolejeunea parvilobula*; **Herzog 1951** as *Pycnolejeunea densistipula* var. *dubia*; **Geissler and Bischler 1989** as *Pycnolejeunea densistipula* var. *dubia* and *Pycnolejeunea parvilobula*; **He 1999**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna, 8 Apr 1987, *Salazar Allen 4981* (PMA, **Dauphin 2007**). VERAGUAS: Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30845* (JE, **Schäfer-Verwimp 2014**).

***COCOS I.** Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 25 Jan 1990, *Dauphin 1054*, det. G. Dauphin Oct 2020 (CR!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 10 m, 26 Jan 1994, *Dauphin 1054*, det. G. Dauphin Oct 2020 (CR!, **this publication**).

Also reported from the Caribbean, Western South America, Brazil.

Pycnolejeunea macroloba (Nees et Mont.) Schiffn., *Hepat. (Engl.-Prantl)*: 124, 1893 (Schiffner 1893a).

≡*Lejeunea macroloba* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 260, 1843 (Montagne 1843). Type: *Patria ignota.*

BELIZE. STANN CREEK: Cockscombe Reserve, 1996, *Eggers & Timm BEZ 5/28*, det. Eggers (**Eggers et al. 2004**). *TOLEDO: Punta Gorda, det. Dauphin May 2017 (MO-5223877! https://www.tropicos.org/specimen/90093900, **this publication**).

COSTA RICA. S. loc. (Stephani 1914; Jovet-Ast 1957; Arnell 1959; He 1999; Bastos 2004; Eggers et al. 2004). PUNTARENAS: Golfito cantón, Refugio de Vida Silvestre, *Aguilar 914.1*, det. Dauphin (CR, **Dauphin 2005**); Osa cantón, Rincón, trail Boscosa-Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9333* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, trail to Cerro Chocuaco, 350 m, *Gradstein & Dauphin 9333 p.p.* (U, USJ, **Gradstein et al. 1994**).

PANAMA. S. loc. (Bastos 2004; Eggers et al. 2004). PANAMA: Panamá distrito, Altos de Cerro Azul, Sendero El Cantar, *Stotler & Crandall-Stotler 3508* (ABSH, **Stotler et al. 1998**); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 1996, *Gradstein* (H, ABSH, **He 1999**).

Also reported from Northern South America, Western South America, Brazil.

Pycnolejeunea schwaneckei (Steph.) Schiffn. ex P.Syd., *Just's Bot. Jahresber.* 19: 246, 1894 (Sydow 1894).

≡*Lejeunea schwaneckei* Steph., *Hedwigia* 27(11/12): 290, 1888 (Stephani 1888a). Type: Puerto Rico.

***NICARAGUA.** *ATLÁNTICO NORTE: Puerto Cabezas municipio, ~14 km W of Rio Wawa ferry on road from Puerto Cabezas to Rosita, 14°06′N, 83°39′W, 1 May 1978, *Stevens 8605*, det. Dauphin May 2017 (MO-5238556! http://tropicos.org/specimen/90108890, **this publication**); Rosita municipio, road between Rosita and Puerto Cabezas, 13°58′N, 84°12′W, 50–100 m, 30 Apr 1978, *Stevens 8552*, det. Dauphin May 2017 (MO-5238381! http://tropicos.org/specimen/90108660, **this publication**).

PANAMA. PANAMA: Panamá distrito, Cerro Jefe Mountain near Panama City, ~1,000 m, 1994, *Gradstein* (H, **He 1999**); Panamá distrito, Parque Nacional Chagres, Cerro Azul, Sendero El Cantar, 800 m, 1996, *Reiner-Drehwald 960138* (hb. Drehwald 2812, **He 1999**).

Also reported from the Caribbean, Northern South America.

***Radula* Dumort., *Commentat. Bot. (Dumortier)*: 112, 1822 (Dumortier 1822).**

Radula antilleana Castle, *J. Hattori Bot. Lab.* 21: 48, 1959 (Castle 1959). Type: Puerto Rico.

GUATEMALA. S. loc. (YU, NY, **Castle 1959**, 1968; Fulford 1987; Yamada 1988b; Schäfer-Verwimp and Pócs 2009).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Schäfer-Verwimp et al. 2013). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Cordillera de Tilarán, 1,550 m, Jul 1971, *James* (GOET, **Holz et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, *Gradstein 9448* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Monteverde, Oct 1967, *James, W.* (R, US, **Dauphin 2005**); Monteverde, 9 Nov 1993, *Gradstein & Mues 9681* (GOET, **Holz et al. 2001**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America.

Radula campanulata Lindenb. et Gottsche, *Syn. Hepat.* 2: 256, 1845 (Gottsche et al. 1845b). Type: Dominican Republic.

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). PUNTARENAS: Osa cantón, Rincón trail Boscosa-Chocuaco, 250 m, 30 Oct 1993, *Gradstein & Dauphin 9329* (GOET, **Holz et al. 2001**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America(?).

Radula costaricensis Gottsche, *J. Bot.* 15: 226, 1877 (Polakowsky 1877). Type: Costa Rica, Alajuela, s. loc. Jun 1875, *Polakowsky 120a.*

COSTA RICA. S. loc. (Dauphin 2005). ALAJUELA: S. loc., Jun 1875, *Polakowsky 120a* (**TYPE**, **Polakowsky 1877**, **1879**; **Geissler and Bischler 1990**).

Not found outside Central America.

Radula elliottii Castle, *J. Hattori Bot. Lab.* 21: 12, 1959 (Castle 1959). Type: Dominica.

GUATEMALA. EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: Todos Santos

Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez 1187* (USCG, Pérez 2009). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from the Caribbean, Northern South America.

Radula episcia Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 318, 1885 (Spruce 1885). Type: Ecuador.

=*Radula cornucopiae* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 318, 1885 (Spruce 1885), syn. fide Yamada and Gradstein (1991). Type: Ecuador.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.43* (PMA, **Spörle 1990** as *Radula cornucopiae*; **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, *Salazar Allen et al. 6179*, *6240* (PMA, **Stotler et al. 1998**); Gualaca distrito, NE of camping site of Fortuna, *Salazar Allen et al. 543*, *581*, *582* (PMA, **Stotler et al. 1998**); Gualaca distrito, NE of camping site of Fortuna, 1,000–1,200 m, *Salazar Allen et al. 583* (PMA, **Stotler et al. 1998**).

Also reported from the Caribbean, Western South America, Southern South America.

Radula evansii Castle, *Ann. Bryol.* 11: 37, 1938 (Castle 1938). Type: Dominica.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 156* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from Mexico, the Caribbean.

Radula fendleri Gottsche ex Steph., *Hedwigia* 23(10): 146, 1884 (Stephani 1884a) var. ***fendleri***. Type: Venezuela.

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,700 m, 29–30 Mar 2013, *Schäfer-Verwimp & Verwimp 34442* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Radula flaccida Lindenb. et Gottsche, *Syn. Hepat. 5*: 726, 1847 (Gottsche et al. 1847). Type: Mexico.

GUATEMALA. S. loc. (Schuster 1980d; Fulford and Sharp 1990; Lücking 1995). ALTA VERAPAZ: Santa María Cahabón municipio, Secanquim, 1905, *Maxon & Hay 3211* (Y, **Castle 1925, 1939**). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**).

BELIZE. STANN CREEK: Cockscombe Reserve, 17 Mar 1996, *Eggers BEZ 5/24* (**O'Shea et al. 1997**; **Eggers et al. 2001**).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54792*, *54846 p.p.* (**Herzog 1951**).

COSTA RICA. S. loc. (Stephani 1910a; Schuster 1980d; Fulford and Sharp 1990). CARTAGO: S. loc., *Tonduz* (**Reiner-Drehwald 1994**); Buenos Aires cantón, Cabayra, 1892, *Tonduz 15565* (G, NY, Y, **Castle 1939**); Buenos Aires, 1892, *Tonduz 15588* (G, Y, **Castle 1939**); Jiménez cantón, Río Naranjo, 1893, *Tonduz* (G, **Castle 1939**); Paraíso cantón, Orosi, Tapantí, *Morales 1797 p.p.*, det. Morales (USJ, **Morales 1991**; **Dauphin 2005**); Turrialba cantón, CATIE, 600 m, Mar 1991, *Lücking 91-6*, *91-136*, *91-138* (hb. Lücking, **Lücking 1995**); Turrialba cantón, Vallée de Tuis, bassin de Reventazón, 1893, *Tonduz 15594* (G, Y, **Castle 1939**). LIMÓN: Guácimo cantón, Jalova, southern border of the Tortuguero National Park, 2 m, 19 Feb 1985, *Eggers CR 12/7* (**Eggers et al. 2001**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, *Lücking 31928* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-134*, *91-137* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Buenos Aires cantón, 9°10′N, 83°20′W, *Tonduz* (**Reiner-Drehwald 1994**); Buenos Aires cantón, Boruca (**Tonduz 1895a**); Buenos Aires cantón, Boruca, *Pittier 6073* (G, Y, **Stephani 1893c**; **Morales 1991**; **Dauphin 2005**); Buenos Aires cantón, Boruca, 1891, *Tonduz et al. 6073* (Y, **Castle 1939**); Golfito cantón, Nationales Refugium Golfito, 50–100 m, Aug 1991, *Lücking 91-133* (hb. Lücking, **Lücking 1995**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfito, *Lücking 91-33* (**Dauphin 2005**).

PANAMA. S. loc. (Lücking 1995); Canal Zone (Schäfer-Verwimp 2014). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9252* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); INRENARE station, foothills of Cerro Pirre, 100 m, *Salazar Allen & Gradstein 9220*, *9240* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15107* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Mežaka et al.* (PMA, **Mežaka et al. 2020**); La Chorrera distrito, Barro Colorado Island, *Salazar Allen & Gradstein 15145* (MO, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, Bay East from Gross 5, 2003, *Dauphin 3172* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Quebrada R. Shannon, *Marino 5*, *6*, *35*, *36* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon Creek and ridge top, 1 Dec 1990, *Marino & Salazar Allen* (STRI, **Marino and Salazar Allen 1992**). VERAGUAS: Santa Fe distrito, Rio Santa María,

8°32′N, 81°06′W, 400–450 m, 1 Apr 2006, *Schäfer-Verwimp & Verwimp 30794* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Dauphin 1995); Quebrada al Sur de Punta Ulloa, 100 m, 15 Feb 1994, *Dauphin 1231*, det. K. Yamada (USJ, CR, **Dauphin 1995**, **1999**, **2005**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 508*, *512*, *523*, *527*, *528* (hb. Bernecker, **Bernecker-Lücking 2000**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Radula gottscheana Taylor, *London J. Bot. 5*: 374, 1846 (Taylor 1846a). Type: Dominican Republic.

Note: Renner et al. (2022) recently described the new genus *Cladoradula* (Spruce) M.A.M.Renner, Gradst., Ilk.-Borg. et F.R.Oliveira-da-Silva with *Radula gottscheana* as type. In the same publication they treat *Radula gottscheana* as a synonym of the African *Cladoradula boryana* (F.Weber) M.A.M.Renner, Gradst., Ilk.-Borg. et F.R.Oliveira-da-Silva, which has priority. We are holding off applying this synonymy, but all references to *Radula boryana* from the Neotropics can be referred to *Radula gottscheana* if the latter is recognized.

GUATEMALA. QUICHÉ: S. loc., *Pérez 2308* (USCG, Pérez 2009).

BELIZE. TOLEDO: Columbia River Forest Reserve, 705 m, *Allen 18598* (MO, **Renner et al. 2022** as *Cladoradula boryana*; see note).

HONDURAS. COMAYAGUA: Siguatepeque, 1,080–1,400 m, *Standley 56340* (JE, **Renner et al. 2022** as *Cladoradula boryana*; see note).

COSTA RICA. S. loc. (Stephani 1910a). CARTAGO: Jiménez cantón, Pejibaye, 900 m, *Standley & Valerio 46972* (JE, **Renner et al. 2022** as *Cladoradula boryana*; see note); Jiménez cantón, Rio Naranjo, *Tonduz 1893* (**Dauphin 2005**); Jiménez cantón, Río Naranjo, 1893, *Tonduz* (G, **Morales 1991**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Cordillera de Talamanca, N of Santa Elena, 1,100 m, *Davidse et al. 28217* (GOET, MO, **Renner et al. 2022** as *Cladoradula boryana*; see note); Distrito Potrero Grande, Parque Natural La Amistad, Cerro Bioley, *Dauphin et al. 1631* (MO, **Renner et al. 2022** as *Cladoradula boryana*; see note); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Osa cantón, Península de Osa, Boscosa-Chocuaco (Dauphin 2005). SAN JOSÉ: Buena Vista, 1903, *Cook & Doyle 118*, *146* (Y, **Morales 1991**; **Dauphin 2005**); Dota cantón, Santa María, 1,500–1,800 m, *Standley 41693* (JE, **Renner et al. 2022** as *Cladoradula boryana*; see note).

PANAMA. BOCAS DEL TORO: Campamento la pasta del Cedro, 1,525 m, *Alfaro & Monro 5440* (MO, **Renner et al. 2022** as *Cladoradula boryana*; see note). CHIRIQUÍ: Boquete distrito, Plateau above Boquete, Holcomb Trail, *Cornman 3198* (MO, **Renner et al. 2022** as *Cladoradula boryana*; see note); Gualaca distrito, Cerro Pinola, *Spörle 1.1* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,660 m, *Schäfer-Verwimp & Verwimp 34424* (JE, MO, **Schäfer-Verwimp 2014**; **Renner et al. 2022** as *Cladoradula boryana*; see note); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34712* (JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Radula husnotii Castle, *J. Hattori Bot. Lab* 21: 45, 1959 (Castle 1959). Type: Guadeloupe.

GUATEMALA. S. loc. (Castle 1968; Fulford 1987; Yamada 1988b; Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, 1,600 m, 1908, *Türckheim 5592* (Y, BM, **Castle 1959**).

COSTA RICA. S. loc., *M. J. Lyon* (**Devos et al. 2011**; Renner et al. 2022).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America(?).

Radula inflexa Gottsche ex Steph., *Hedwigia* 23(10): 148, 1884 (Stephani 1884a). Type: Guadeloupe.

GUATEMALA. S. loc. (Castle 1968; Fulford 1987; Yamada 1980, 1988a; Fulford and Sharp 1990). ALTA VERAPAZ: Cobán, 1,350 m, 1907, *Türckheim 5496* (Y, NY, **Castle 1963**).

Also reported from Mexico, the Caribbean, Brazil.

Radula javanica Gottsche, *Syn. Hepat.* 2: 257 (Gottsche et al. 1845b). Lectotype: Caroline Islands.

=*Radula macrostachya* Lindenb. et Gottsche, *Syn. Hepat.* 5: 726, 1847 (Gottsche et al. 1847), syn. fide Yamada (2000). Type: Mexico.

=*Radula amazonica* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 257, 1884 (Spruce 1884), syn. fide Yamada (2000). Type: Brazil.

=*Radula surinamensis* Steph., *Hedwigia* 23(8): 136, 1884 (Stephani 1884b), syn. fide Yamada (2000). Type: Surinam.

=*Radula elegans* Steph., *Sp. Hepat.* 4: 172, 1910 (Stephani 1910a), syn. with *Radula surinamensis* fide Yamada (1991). Lectotype (Castle 1966: 15) or possibly holotype: Panama, Chiriquí, *Hélion*, ex hb. Lacouture (G-00043875 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=129309&lang=en).

=*Radula falcifolia* Steph., *Sp. Hepat.* 4: 174, 1910 (Stephani 1910a), syn. fide Yamada (1991). Lectotype (Castle 1967: 19) or possibly holotype: Costa Rica, Carrisol, 2,800 m, 1889, *Pittier & Durand*, Pl. costaricenses exsic. No. 6013b (G-00042622 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=79809&lang=en).

GUATEMALA. S. loc. (Stephani 1910a as *Radula macrostachya*; Fulford and Sharp 1990 as *Radula elegans*). ALTA VERAPAZ: Cobán municipio, Cubilquits, 350 m, 1906, *Türckheim 5102* (G, **Castle 1966** as *Radula elegans*); Cobán, 1887, *Türckheim 3* (Y, **Castle 1966** as *Radula elegans*); Oxec, 20 Jul 1977, *Croat 41665* (MO, NY, Pérez 2009 as *Radula surinamensis*); Santa María Cahabón municipio, Secanquim, 550 m, 1905, *Maxon & Hay 3194a* (Y, **Castle 1966** as *Radula elegans*). BAJA

VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 98* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Radula 'machrostachya'*). EL PETÉN: Fallabon–Yaxhá Road, 1933, *Lundell 2015* (Y, **Castle 1966** as *Radula elegans*); La Libertad, 1933, *Lundell 2508*, *2510*, *3332* (Y, **Castle 1966** as *Radula elegans*). IZABAL: Puerto Barrios, 1904, *Maxon & Hay 3075* (Y, **Castle 1966** as *Radula elegans*).

BELIZE. S. loc., Dec 1993, *Allen 15272* (BRH, MO, **Whittemore and Allen 1996** as *Radula macrostachya*). CAYO: S. loc., Dec 1993, *Allen 15124* (BRH, MO, **Whittemore and Allen 1996** as *Radula macrostachya*).

COSTA RICA. S. loc. (Pagán 1942b as *Radula falcifolia*; Cole 1982, 1983, both as *Radula elegans*; Yamada 1983 as *Radula falcifolia*; Schäfer-Verwimp and Pócs 2009); S. loc., *Gradstein & Dauphin 12894* (GOET, Váňa **et al. 2014a** as *Radula macrostachya*, **2017** as *Radula macrostachya*; **Promma et al. 2018** as *Radula macrostachya*); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Alajuela cantón, Carrizal, 2,800 m (**Castle 1968** as *Radula falcifolia*; **Geissler and Bischler 1990** as *Radula falcifolia*); Alajuela cantón, Carrizal, 2,800 m, 1889, *Pittier & Durand 6013b* (G-00042622 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=79809&lang=en, **TYPE** of *Radula falcifolia*, **Castle 1967** as *Radula falcifolia*); Alajuela cantón, Carrizal, 2,800 m, 1889, *Pittier 6013b* (G-19800, **TYPE** of *Radula falcifolia*, **Stephani 1910a** as *Radula falcifolia*; **Morales 1991** as *Radula falcifolia*; **Yamada 1991** as *Radula surinamensis*; **Dauphin 2005** as *Radula surinamensis*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Morales 1991 as *Radula elegans*; Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Radula macrostachya*); Monteverde, 1,500–2,800 m, *James, W.* (**Dauphin 2005** as *Radula surinamensis*); Monteverde, Oct 1967, *James, W.* (R, US, **Reed and Robinson 1971** as *Radula elegans*); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b** as *Radula macrostachya*). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. S. loc. (**Fulford and Sharp 1990** as *Radula elegans*); S. loc., 1906, *Hélion* (PC, **Stotler et al. 1998** as *Radula macrostachya*). *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Villarreal PA-17-1760*, det. Villarreal Aug 2017 (PMA, **this publication**). CHIRIQUÍ: S. loc. (**Stephani 1910a** as *Radula elegans*; **Castle 1968** as *Radula elegans*; **Geissler and Bischler 1990** as *Radula elegans*; Stotler et al. 1998 as *Radula macrostachya*); S. loc., *Hélion* (G-00043875, **TYPE** of *Radula elegans*, **Castle 1966** as *Radula elegans*; **Yamada 1991** as *Radula surinamensis*). PANAMA WEST: Capira distrito, Parque Nacional Altos de Campana, Sendero de Interpretación, 1 km E del campamento de los guardabosques del INRENARE, 8°40′N, 79°55′W, 800–900 m, 7 Apr 1989, *Lara et al. 1459* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado Island, 9°09′N, 79°51′W, 20–170 m, *Gradstein & Salazar Allen 15116*, *15117*, *15136*, *15138* (GOET, PMA, **Dauphin et al. 2006, 2022**); La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3154* (PMA, **Dauphin et al. 2006** as *Radula amazonica*); La Chorrera distrito, Barro Colorado Island, F Miller 5–6, 9°09′N, 79°51′W, 20–170 m, *Salazar Allen 4414a* (PMA, Dauphin et al. 2006); La Chorrera distrito, Barro Colorado Island, Fairchild 18, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3139* (PMA, **Dauphin et al. 2006** as *Radula amazonica*); La Chorrera distrito, Barro Colorado Island, Miller 5–6, 9°09′N, 79°51′W, 20–170 m, *Salazar Allen 4414a* (PMA, **Stotler et al. 1998** as *Radula macrostachya*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Van Tyne 10, 18, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3082*, *3083* (PMA, **Dauphin et al. 2006**); La Chorrera distrito, Barro Colorado, van Tyne, 2003, *Dauphin 3082*, *3083* (CR, PMA, **Dauphin et al. 2022**).

COCOS I. Bahía Wafer, 0 m, 15 Feb 1994, *Dauphin 916*, *923*, *955*, det. K. Yamada (USJ, **Dauphin 1995** as *Radula macrostachya*, **2005**); Bahía Wafer, cerca Río Genio, 10 m, 15 Feb 1994, *Dauphin 927*, *940*, det. K. Yamada (USJ, **Dauphin 1995** as *Radula macrostachya*, **2005**); Cascada Río Genio, 130 m, 15 Feb 1994, *Dauphin 998*, det. K. Yamada (USJ, **Dauphin 1995** as *Radula macrostachya*, **2005**); Río Genio, 30 m, 15 Feb 1994, *Dauphin 1127*, det. K. Yamada (USJ, **Dauphin 1995** as *Radula macrostachya*, **2005**); Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 927*, det. G. Dauphin Apr 2021 (CR-4468156!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–10 m, *Dauphin 940*, det. G. Dauphin Apr 2021 (USJ-47238!, CR-4468437!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 955*, det. G. Dauphin Apr 2021 (CR-4468155!, W!, **this publication**); Río Genio, 5°32′57″N, 87°03′56″W, 30 m, 6 Feb 1990, *Dauphin 1127*, det. G. Dauphin Jan 2021 (CR-4468153!, W!, **this publication**); Valle Wafer, 5°32′57″N, 87°03′56″W, 0–5 m, 19 Jan 1990, *Dauphin 923*, det. G. Dauphin Apr 2021 (CR-4468164!, **this publication**).

Also reported from Western Indian Ocean(?), China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific, Northeastern Pacific, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula laxiramea Steph., *Sp. Hepat.* 4:178, 1910 (Stephani 1910a). Lectotype (Castle 1959: 45; see also Söderström et al. 2023a: 154): Panama, Chiriquí, *Hélion 412*, *hb. Lacouture* (G-00112206 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131244&lang=en, isolectotypes YU, BM, PC).

GUATEMALA. S. loc. (Pagán 1939c; Castle 1968; Yamada 1991). ALTA VERAPAZ: Senahú municipio, Finca Mocca, 3,500 ft (1,067 m), 1920, *Johnson 152* (YU, G, **Castle 1959**).

EL SALVADOR. S. loc. (Yamada 1991). SAN VICENTE: Volcán de San Vicente, 12–1,500 m, 1922, *Standley 21573* (YU, **Castle 1959**).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, Refugio de Vida Silvestre Tapantí, 1,300 m, 30 Dec 1999, *Holz & Schäfer-Verwimp CR 99-1366* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Cordillera de Talamanca, Pan-American Highway km 117, 1,700 m, 13 Oct 1999, *Anton & Holz AHH-324* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, 1,900–2,200 m, 24 Apr 1999, *Holz CR 99-342*, *99-344* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. S. loc. (Pagán 1939c; Yamada 1991). CHIRIQUÍ: S. loc. (**Stephani 1910a**; Stotler et al. 1998); Boquete distrito, Bois de Boquete, near David, *Hélion 412* (G-00112206 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131244&lang=en, YU, BM, PC, **TYPE, Castle 1959**; **Yamada 1991**; **Stotler et al. 1998**).

Also reported from the Caribbean, Northern South America, Western South America.

Radula mammosa Spruce, *Mem. Torrey Bot. Club* 1(3): 127, 1890 (Spruce 1890). Type: Bolivia.

=*Radula lindigii* Castle, *J. Hattori Bot. Lab.* 21: 29, 1959 (Castle 1959), syn. fide Gradstein et al. (2003). Type: Colombia.

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**). CHIMALTENANGO: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). IZABAL: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**). QUICHÉ: S. loc., *Pérez 2331* (USCG, Pérez 2009).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/4*, *A/1/5*, *A/1/11*, *etc.* (**Winkler 1967**).

NICARAGUA. GRANADA: Granada municipio, Volcán Mombacho, 1903, *Baker 2491* (YU, **Castle 1959** as *Radula lindigii*).

COSTA RICA. SAN JOSÉ: Dota cantón, San Gerardo, ~9°33′N, 83°48′W, Weg von Ferienanlage Chacon zu "Las Cruzes" am Rio Savegre, 1,900 m, 25 Dec 1999, *Schäfer-Verwimp & Holz SV/H-0128/D* (CR, JE, **Ellis et al. 2016a**).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula mexicana Lindenb. et Gottsche, *Mexik. Leverm.*: 150, 1863 (Gottsche 1863). Type: Mexico.

GUATEMALA. S. loc. (Castle 1968; Yamada 1988b, 1993; Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009). ALTA VERAPAZ: Cobán, *Türckheim 6060 bis* (G-00051328, **Castle 1964**). *EL PETÉN: Flores municipio, SW side of Laguna Yaxhá, Reserva Privada Yaxhá, 17°03.295′N, 89°23.236′W, 25 Jan 2006, *Quedensley 4136*, det. Dauphin Sep 2017 (MO, W-0089083!, **this publication**). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). HUEHUETENANGO: S. loc., *Pérez 1208* (USCG, Pérez 2009). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Radula neotropica Castle, *J. Hattori Bot. Lab.* 21: 31, 1959 (Castle 1959). Type: Dominica.

GUATEMALA. S. loc. (Castle 1968; Fulford 1987; Fulford and Sharp 1990); S. loc., 1892 (YU, G, **Castle 1959**). ALTA VERAPAZ: Oxec, 20 Jul 1977, *Croat 41601* (MO, Pérez 2009).

HONDURAS. S. loc., *Allen 11935* (NY, Váňa **et al. 2017**).

Also reported from Mexico, the Caribbean, Northern South America(?).

Radula nudicaulis Steph., *Sp. Hepat. (Stephani)* 4: 174, 1910 (Stephani 1910a). Type: Brazil.

COSTA RICA. S. loc. (Gradstein and Holz 2005; Oliveira-da-Silva et al. 2021); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). CARTAGO: Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 26 Jun 2000, *Holz CR 00-809* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); El Guarco cantón, La Esperanza, *Kappelle et al. 276* (**Dauphin 2005**); El Guarco cantón, La Esperanza, 1.5 km N Pan-American Highway (km 61.5), 1,500 m, 11 Dec 1985, *Kappelle 276* (GOET, **Holz et al. 2001**); Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,630 m, 9 Jan 1986, *Kappelle et al. 602* (GOET, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: Cerro Estaquero (km 83, RN 2), 3,140 m, 8 Jun 1983, *Chaverri & López 1413* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Desamparados cantón, Frailes, between San Antonio and San Cristóbal Sur, 1,800 m, 8 Jun 1986, *Kappelle & Gutiérrez 1782* (GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, San Gerardo, Los Robles, 2,300 m, 30 Jan 2000, *Holz CR 00-331* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Dota cantón, San Gerardo, Los Robles, 2,900 m, 14 Mar 2000, *Holz CR 00-642* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

Also reported from Macaronesia, Mexico(?), Western South America, Brazil.

Radula paganii Castle, *J. Hattori Bot. Lab.* 21: 33, 1959 (Castle 1959). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean.

Radula pallens (Sw.) Nees ex Mont., *Voy. Amér. Mérid.* 7(2): 71, 1839 (Montagne 1839b).

≡*Jungermannia pallens* Sw., *Prodr. (Swartz)*: 173, 1788 (Swartz 1788). Type: Jamaica.

=*Radula subsimplex* Steph., *Hedwigia* 23(8): 130, 1884 (Stephani 1884c), syn. fide Gradstein and Lavocat Bernard (2020). Type: Guadeloupe.

=*Radula kegelii* Gottsche ex Steph., *Hedwigia* 23(10): 152, 1884 (Stephani 1884a), syn. fide Gradstein (2021). Type: Surinam.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 53*, *236* (USCG, **Freire et al. 2013** as *Radula subsimplex*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Radula 'kegelli'* and *Radula subsimplex*).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15110* (BRH, MO, **Whittemore and Allen 1996** as *Radula kegelii*).

HONDURAS. S. loc. (Castle 1968 as *Radula kegelii*; Fulford 1987 as *Radula kegelii*; Yamada 1988b as *Radula kegelii*; Fulford and Sharp 1990 as *Radula kegelii*; Reiner-Drehwald 1994 as *Radula kegelii*; Schäfer-Verwimp and Pócs 2009 as *Radula kegelii*; Lavocat Bernard 2018 as *Radula kegelii*); S. loc., 1903, *Wilson 287* (YU, **Castle 1959** as *Radula kegelii*). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**).

EL SALVADOR. AHUACHAPÁN: S. loc. (**Standley and Calderón 1925**).

COSTA RICA. S. loc. (Castle 1968 as *Radula kegelii*; Yamada 1988b as *Radula kegelii*; Fulford and Sharp 1990 as *Radula kegelii*; Reiner-Drehwald 1994 as *Radula kegelii*; Schäfer-Verwimp and Pócs 2009 as *Radula kegelii*; Lavocat Bernard 2018 as *Radula kegelii*); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (YU, G, S, **Hampe 1851b**; **Müller 1851**; **Polakowsky 1879**; **Castle 1959** as *Radula kegelii*; **Morales 1991** as *Radula kegelii*; **Dauphin 2005** as *Radula kegelii*). ALAJUELA: S. loc., *Polakowsky 120c* (**Polakowsky 1877**; **Morales 1991**); S. loc., *Polakowsky* (**Polakowsky 1879**); S. loc., 1891–1896, *Durand & Pittier* (**Morales and Griffin 1983**). SAN JOSÉ: Montaña de Poás, Macizo de Escazú, 2,275 m, *Pittier 6005* (**Stephani 1893c**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021** as *Radula kegelii*); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021** as *Radula kegelii*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34500* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,680 m, *Schäfer-Verwimp & Verwimp 34440* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*); Tierras Altas distrito, Laguna de El Volcán, 8°46.1′N, 82°40.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34644* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34593* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*). COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34192*, *34208* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*). DARIÉN: S. loc. (Schäfer-Verwimp 2014 as *Radula kegelii*); Cerro Pirre (Stotler et al. 1998 as *Radula kegelii*); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Radula kegelii*). PANAMA WEST: Capira distrito, Altos de Campana National Park, 800–900 m, *Salazar Allen et al. 6794* (PMA, **Stotler et al. 1998** as *Radula kegelii*). ?PANAMA: S. loc. (Schäfer-Verwimp 2014 as *Radula kegelii*). Note: We are not aware of any first-hand report from Panama Province and think it refers to Panama West. VERAGUAS: Santa Fe distrito, along road to Guabal on the Caribbean coast, 8°31.9–33.9′N, 81°08.8–11.3′W, 330 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34298* (JE, **Schäfer-Verwimp 2014** as *Radula kegelii*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula portoricensis Steph., *Hedwigia* 27(11/12): 298, 1888 (Stephani 1888a). Type: Puerto Rico.

=*Radula guatemalensis* Steph., *Sp. Hepat.* 4: 198, 1910 (Stephani 1910a), syn. fide Yamada (1981b). Lectotype (Castle 1936: 50) or possibly holotype: Guatemala, west of Cobán, 1906, *Türckheim*, Bryotheca Levier No. 6329 (G-00112156 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=132567&lang=en).

GUATEMALA. S. loc. (**Castle 1968** as *Radula guatemalensis*; Schuster 1980a as *Radula guatemalensis*; Yamada 1988b; **Geissler and Bischler 1990** as *Radula guatemalensis*; Schäfer-Verwimp and Pócs 2009). ALTA VERAPAZ: Cobán municipio, west of Cobán, Sep 1906, *Türckheim 6329* (G-00112156 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=132567&lang=en, **TYPE** of *Radula guatemalensis*, **Stephani 1910a** as *Radula guatemalensis*; **Castle 1936** as *Radula guatemalensis*; **Yamada 1981a**).

Also reported from the Caribbean, Northern South America.

Radula pusilla Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 320, 1885 (Spruce 1885). Type: Ecuador.

?COSTA RICA. S. loc. (Gradstein 2021). Note: We are not aware of any firsthand report from Costa Rica mainland and think it refers to Cocos I.

COCOS I. Catarata Río Genio, 5°32′57″N, 87°03′56″W, 140 m, 24 Jan 1990, *Dauphin 1013*, det. K. Yamada 1994 (USJ-47240!, CR-4468158!, **Dauphin 1995**, **1999**, **2005**); Río Genio,

5°32′57″N, 87°03′56″W, 140 m, 24 Jan 1994, *Dauphin 1022*, det. K. Yamada (USJ-472241, W-0207482! https://w.jacq.org/W0207482, **Dauphin 1995, 2005**).

Also reported from the Caribbean, Northern South America, Western South America.

Radula quadrata Gottsche, *Syn. Hepat.* 2: 255, 1845 (Gottsche et al. 1845b). Type: Mexico.

=*Radula affinis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 725, 1847 (Gottsche et al. 1847), syn. fide Yamada (1993). Type: Mexico.

=*Radula mollis* Lindenb. et Gottsche, *Syn. Hepat.* 5: 745, 1847 (Gottsche et al. 1847), syn. fide Yamada and Gradstein (1991). Type: Mexico.

=*Radula andicola* Steph., *Hedwigia* 23(8): 114, 1884 (Stephani 1884b), syn. fide Yamada (1993). Type: Ecuador.

GUATEMALA. S. loc. (Stephani 1910a also as *Radula affinis*; Schuster 1980d as *Radula mollis*; Fulford and Sharp 1990 also as *Radula* '*affinia*'; Miller et al. 1983 as *Radula mollis*; Yamada 1993, 2000; Reiner-Drehwald 1994; Kürschner 2003). ALTA VERAPAZ: S. loc., 1892, *Türckheim 4949* (G, **Castle 1965**); Cobán, 1,350 m, 1906, *Türckheim 5099* (BM, G, NY, **Castle 1965** as *Radula mollis*); Cobán, 1,350 m, 1906, *Türckheim 5100*, *5101*, *5570* (NY, **Castle 1965** as *Radula mollis*). RETALHULEU: San Felipe, 1905, *Maxon & Hay 3507* (Y, **Castle 1965** as *Radula mollis*).

HONDURAS. S. loc. (Yamada 1982 as *Radula affinis*; Fulford and Sharp 1990 as *Radula* '*affinia*'). COMAYAGUA: Siguatepeque, 1,050 m, 1936, *Yuncker et al.* (Y, **Castle 1966** as *Radula affinis*).

COSTA RICA. Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006); S. loc. (**Stephani 1910a** as *Radula andicola*; Evans 1914b as *Radula andicola*; Herrera 1921, 1926, 1930, 1941, all as *Radula andicola*; Schuster 1980d as *Radula mollis*; Miller et al. 1983 as *Radula mollis*; Yamada 1993, 2000; Reiner-Drehwald 1994). CARTAGO: Jiménez cantón, Juan Viñas (Tonduz 1895b as *Radula mollis*); Jiménez cantón, Juan Viñas, *Pittier 6039* (G, **Stephani 1893c** as *Radula mollis*; **Morales 1991** as *Radula mollis*; **Dauphin 2005**); Jiménez cantón, Juan Viñas, *Tonduz 3054* (**Dauphin 2005**); Jiménez cantón, Juan Viñas, 1,135 m, 1890, *Pittier & Durand 6039* (G, **Castle 1965** as *Radula mollis*); Jiménez cantón, Juan Viñas, 1890, *Tonduz 3054* (G, **Castle 1965** as *Radula mollis*; **Morales 1991** as *Radula mollis*); Santiago, 1,050 m, 1906, *Maxon 115* (Y, **Castle 1965** as *Radula mollis*; **Morales 1991** as *Radula mollis*; **Dauphin 2005**); Santiago, 1,050 m, 1906, *Maxon 90*, *126* (Y, **Castle 1965** as *Radula mollis*; **Morales 1991** as *Radula mollis*; **Dauphin 2005**). HEREDIA: Barva cantón, Barva forest, *Pittier 6009* (**Stephani 1893c** as *Radula mollis*; **Morales 1991** as *Radula mollis*); Barva cantón, Barva forest, 1890, *Pittier & Durand 6009* (G, **Castle 1965** as *Radula mollis*; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Monte Hacum, 1892, *Tonduz* (G, **Castle 1965** as *Radula mollis*; **Morales 1991** as *Radula mollis*; **Dauphin 2005**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

PANAMA. S. loc. (Schuster 1980d as *Radula mollis*; Yamada 1993, 2000; Reiner-Drehwald 1994; Stotler et al. 1998). CHIRIQUÍ: S. loc., *Hélion 417* (G hb. Stephani, **Castle 1965** as *Radula mollis*; **Stotler et al. 1998**); Tierras Altas distrito, El Volcán, road to Rio Sereno, near Santa Clara, 8°49.8′N, 82°44.0′W, 1,200 m, 2 Apr 2009, *Schäfer-Verwimp & Verwimp 34176* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34633* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Fosberg and Klawe 1966 as *Radula affinis*; Dauphin 1995, 1999, both as *Radula affinis*, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991 as *Radula affinis*); Wafer Bay, 28 Jun 1932, *Howell 222 p.p.*, *229 p.p.* (CAS, **Clark 1953a** as *Radula affinis*); Wafer Bay, 28 Jun 1932, *Walton Clark 221 p.p.*, *230 p.p.* (CAS, **Clark 1953a** as *Radula affinis*).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, North-Central USA, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula recubans Taylor, *London J. Bot.* 5: 376, 1846 (Taylor 1846a). Type: Guyana.

GUATEMALA. S. loc. (Oliveira-da-Silva et al. 2021). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 10* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Northern South America, Western South America(?), Brazil.

Radula saccatiloba Steph., *Hedwigia* 23(8): 129, 1884 (Stephani 1884a). Type: Guadeloupe.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 462*, *485* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

PANAMA. ?CHIRIQUÍ: Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, Guerra et al. 2020 as *Radula* cf. *saccatiloba*). Note: We are not aware of any positively identified specimen from Chiriquí. DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 800–1,150 m, *Salazar Allen & Gradstein 9260* (PMA, **Stotler et al. 1998**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

Also reported from Indian Subcontinent, Malesia, the Caribbean, Northern South America, Western South America, Brazil(?).

Radula schaefer-verwimpii K. Yamada, *J. Jap. Bot.* 65(1): 3, 1990 (Yamada 1990). Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 299* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Radula* cf. *schaefer-verwimpii*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean(?), Northern South America, Western South America, Brazil.

Radula schofieldiana K. Yamada, *J. Hattori Bot. Lab.* 82: 337, 1997 (Yamada 1997). Holotype: Costa Rica, San José, La Palma, 1,600 m, 17 Mar 1924, *Standley 37992* (JE-04008914 https://je.jacq.org/JE04008914; isotype NICH-432557).

COSTA RICA. S. loc. (Holz et al. 2001). SAN JOSÉ: Moravia cantón, La Palma (Dauphin 2005); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 37992* (JE-04008914 https://je.jacq.org/JE04008914, NICH, **TYPE, Yamada 1997**; **Crosby and Engel 2006**).

Not found outside Central America.

Radula sinuata Gottsche ex Steph., *Sp. Hepat. (Stephani)* 4: 161, 1910 (Stephani 1910a). Type: Brazil.

=*Radula montana* Steph., *Sp. Hepat. (Stephani)* 4: 176, 1910 (Stephani 1910a), syn. fide Yamada (2000). Type: Brazil.

GUATEMALA. S. loc. (Castle 1968 as *Radula montana*; Yamada 1987 as *Radula montana*; Reiner-Drehwald 1994 as *Radula montana*). ALTA VERAPAZ: S. loc., 1906, *Türckheim 5130* (G, **Castle 1965** as *Radula montana*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

COSTA RICA. S. loc. (Castle 1968 as *Radula montana*; Yamada 1987 as *Radula montana*; Reiner-Drehwald 1994 as *Radula montana*; Dauphin 2005 as *Radula montana*; Schäfer-Verwimp et al. 2013; Oliveira-da-Silva et al. 2021); S. loc., *Tonduz 1788* (**Morales 1991** as *Radula montana*). HEREDIA: S. loc., 1893, *Tonduz 1788* (G, **Castle 1965** as *Radula montana*); Barva cantón, Barva forest, 1,135 m, *Pittier & Durand* (G, **Castle 1965** as *Radula montana*; **Morales 1991** as *Radula montana*; **Dauphin 2005** as *Radula montana*).

?PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (Salazar Allen et al. 2021 as *Radula* cf. *sinuata*). Note: We are not aware of any positively identified specimen from Panama.

Also reported from Western South America, Brazil, Southern South America.

Radula stenocalyx Mont., *Ann. Sci. Nat. Bot.*, sér. 4, 3(5): 315, 1855 (Montagne 1855). Type: French Guiana.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

HONDURAS. S. loc. (Winkler 1967). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54861*, *87985 p.p.* (**Herzog 1951**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler* (**Winkler 1967**).

COSTA RICA. S. loc. (Winkler 1967; Yamada 1993; Schäfer-Verwimp and Pócs 2009). HEREDIA: San Isidro cantón, Cerro de Caricias, *Standley 51985 p.p.* (**Herzog 1951**); San Isidro cantón, Cerro de Caricias, N of San Isidro, 2,000–2,400 m, *Standley 51985* (**Morales 1991**; **Dauphin 2005**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

PANAMA. ?BOCAS DEL TORO: S. loc. (Schäfer-Verwimp 2014). Note: This report probably refers to the "new" comarca Naso Tjër Di. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34497/D* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34418/B* (JE, **Schäfer-Verwimp 2014**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 222* (PMA, **Dauphin 2007**).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Indian Subcontinent, Indo-China, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Radula subinflata Lindenb. et Gottsche, *Syn. Hepat.* 5: 724, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Radula pallens* var. *flaccida* Steph. ex Castle, *Rev. Bryol. Lichénol.* 29(1/2): 18, 1960 (Castle 1960), nom. inval. (ICN2018 Art. 36.1(b); publ. in syn.), syn. fide Castle (1960). Original material: Costa Rica, Montana de Poás, massif de l'Escazú, 2,275 m, *Pittier 6005* (G).

GUATEMALA. S. loc. (Castle 1968; Fulford and Sharp 1990; Yamada and Gradstein 1991; Schäfer-Verwimp 1999). ALTA VERAPAZ: Cobán, 1,350 m, 1907, *Türckheim 5496* (Y, NY, **Castle 1963**).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, 27 Jul 1927–Mar 1928, *Standley 54900* (JE, **Herzog 1951**).

COSTA RICA. SAN JOSÉ: Montaña de Poás, Macizo de Escazú, 2,275 m, *Pittier 6005* (**TYPE** of *Radula pallens* var. *flaccida*, **Morales 1991**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Radula tectiloba Steph., *Hedwigia* 27(11/12): 298, 1888 (Stephani 1888a). Type: Puerto Rico.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Cañiza et al. 2017; Arrocha et al. 2020). CARTAGO: Cordillera de Talamanca, Cerro de La Muerte, Páramo Buena Vista, km 85 of Pan-American Highway, 3,100 m, 26 Jun 2000, *Holz CR 00-811* (CR, GOET, **Holz et al. 2001**; **Dauphin 2005**). SAN JOSÉ: S. loc. (U-038091, **Reiner-Drehwald 1994**); Dota cantón, San Gerardo, Jaboncillo, 2,900 m, 3 Oct 1999, *Holz CR 99-022* (GOET, **Holz et al. 2001**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Boquerón distrito, Parque Nacional Volcán Barú, Localidad, Finca El Aguacatal, 8°47′22.2′N, 82°34′33.6′W, 2,043 m, 15 Aug 2016, *Guerra 92a* (UCH, **Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Localidad Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, 2,040 m, 6 Jan 2017, *Guerra 103a*, *108b*, *115b* (UCH, **Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Localidad Paso Ancho, Camino de ascenso a la cima, ladera Occidental, Bosque de las Brujas, 2,047 m, 12 Jan 2017, *Guerra 119c* (UCH, **Arrocha et al. 2020**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula tenera Mitt. ex Steph., *Hedwigia* 23(10): 149, 1888 (Stephani 1888a). Type: America tropica.

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 312* (USCG, Pérez 2009); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: San Juan Ixcoy municipio, Piedras de Captzin, 15°33′52″N, 91°29′54″W, 3,387 m, 2006, *Pérez et al. 1293* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2307* (USCG, Pérez 2009).

***EL SALVADOR.** *SANTA ANA: Metapán municipio, Calle Los Planes, 12 Nov 2014, *Búcaro H323 p.p.*, det. Dauphin (MHES!, **this publication**).

COSTA RICA. S. loc. (Gradstein and Holz 2005; Santos 2008; Schäfer-Verwimp et al. 2013; Gradstein 2021; Oliveira-da-Silva et al. 2021); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Norris 111060* (UC-2053338, **Norris et al. 2017**). CARTAGO: El Guarco cantón, 3 de Junio, 2,600 m, *Gradstein & Morales 9393* (U, USJ, **Gradstein et al. 1994**; **Kappelle 1996**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 1,550 m, *Gradstein & Solano 9534* (U, **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Northern South America, Western South America, Brazil, Southern South America.

Radula voluta Taylor, *Syn. Hepat.* 2: 255, 1845 (Gottsche et al. 1845b). Type: Ireland.

=*Radula ramulina* Taylor, *London J. Bot.* 5: 374, 1846 (Taylor 1846a), syn. fide Yamada and Gradstein (1991). Type: Ecuador.

GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Radula ramulina*). ALTA VERAPAZ: Cobán, 1,350 m, 1906, *Türckheim 5099*, *5429* (G, BM, NY, Y, **Castle 1965** as *Radula ramulina*); Senahú municipio, Finca Sepacuité, 900 m, 1905, *Maxon 3252* (US, Y, **Castle 1965** as *Radula ramulina*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). CHIMALTENANGO: Cerro de Tecpán region, Santa Eleva, 2,400–2,760 m, 1938, *Standley 60975* (Y, **Castle 1965** as *Radula ramulina*).

COSTA RICA. S. loc. (Fulford and Sharp 1990 as Radula ramulina; Reiner-Drehwald 1994; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); S. loc., Wercklé (NY, Y, **Dauphin 2005**); S. loc., 1900, Wercklé (YU, NY, **Castle 1965** as Radula ramulina); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Alvarado cantón, Coliblanco, Maxon 342 (NY, Y, **Morales 1991** as Radula ramulina; **Dauphin 2005**); Alvarado cantón, Coliblanco, 1,950 m, 1906, Maxon 342 (NY, Y, **Castle 1965** as Radula ramulina). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005).

PANAMA. CHIRIQUÍ: Boquete distrito, along road to Sendero Los Quetzales and along first part of trail, 8°51′N, 82°30′W, 1,900 m, 6 Apr 2006, *Schäfer-Verwimp & Verwimp 30996* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Internacional La Amistad near Las Nubes above Cerro Punta, near park entrance, 8°53′N, 82°37′W, 2,130–2,250 m, 31 Mar 2009, *Schäfer-Verwimp & Verwimp 34534/C*, *34574* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Parque Nacional Volcán Barú, Paso Ancho, 8°48′55.13″N, 82°34′33.50″W, 2,047 m, *Guerra Batista et al.* (UCH, **Guerra et al. 2020**); Tierras Altas distrito, Volcán, along road to Rio Serena at western edge of the village, 8°47.6′N, 82°39.4′W, 1,370 m, 1 Apr 2009, *Schäfer-Verwimp & Verwimp 34631* (JE, **Schäfer-Verwimp 2014**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Northern Europe, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Radula xalapensis Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 56, 1836 (Nees and Montagne 1836). Type: Mexico.

=*Radula frondescens* Taylor, *London J. Bot.* 4: 181, 1910 (Stephani 1910a), syn. fide Oliveira-da-Silva et al. (2021). Type: Peru.

COSTA RICA. S. loc. (Gradstein 2021); S. loc., *Holz CR 00-774B* (GOET, **Heinrichs et al. 2007** as *Radula frondescens*; **Feldberg et al. 2014** as *Radula frondescens*). CARTAGO: Turrialba cantón, Villa Mills, CATIE Station Siberia, 2,700 m, 28 Feb 2000, *Holz CR 00-493* (CR, GOET, **Holz et al. 2001** as *Radula frondescens*; **Dauphin 2005** as *Radula frondescens*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Radula frondescens*); Monteverde cantón, Cordillera de Tilarán, Reserva Biológica Monteverde, 1,550 m, 9 Nov 1993, *Gradstein 9443* (GOET, **Holz et al. 2001** as *Radula frondescens*; **Dauphin 2005** as *Radula frondescens*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Radula frondescens*). SAN JOSÉ: Dota cantón, Los Quetzales National Park (Amengual et al. 2007 as *Radula frondescens*); Dota cantón, San Gerardo, *Holz CR 00-749b* (**Dauphin 2005** as *Radula frondescens*); Dota cantón, San Gerardo, *Schäfer-Verwimp & Holz SV/H-0111* (**Dauphin 2005** as *Radula frondescens*); Dota cantón, San Gerardo, 1,900–2,100 m, 5 Mar 1999, *Holz CR 99-035, 99-749B, SV/H-0111* (CR, GOET, **Holz et al. 2001** as *Radula frondescens*; **Dauphin 2005** as *Radula frondescens*).

Also reported from Northeastern USA(?), Southeastern USA(?), Mexico, Northern South America, Western South America, Brazil, Southern South America.

Radula yanoella R.M.Schust., *Phytologia* 56(2): 72, 1984 (Schuster 1984). Type: Brazil.

COSTA RICA. S. loc. (Gradstein et al. 2001b; Gradstein and Costa 2003; Schäfer-Verwimp et al. 2013; Costa et al. 2017, 2020; Gradstein 2021; Oliveira-da-Silva et al. 2021). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-615* (**Dauphin et al. 1998**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-615* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Reboulia Raddi, *Opusc. Sci.* 2(6): 357, 1818 (Raddi 1818a).

*****Reboulia hemisphaerica*** (L.) Raddi, *Opusc. Sci.* 2:357, 1818 (Raddi 1818a).

≡*Marchantia hemisphaerica* L., *Sp. Pl.* 1: 1158, 1753 (Linnaeus 1753). Type: Europe.

Note: We do not know to which subspecies the *Reboulia hemisphaerica* reports from Central America belong. It is here confirmed for Central America.

***GUATEMALA.** S. loc. (Miller et al. 1983). *HUEHUETENANGO: San Rafael Petzal municipio, ~20 km N Huehuetenango, 15°28′45.8″N, 91°31′47.7″W, 3,700 m, 4 Apr 2007, *Laeger et al. 3679*, det. Whittemore 2009 (MO-6160447! http://tropicos.org/specimen/101411572, **this publication**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Rectolejeunea A.Evans, *Bull Torrey Bot. Club* 33(1): 8, 1906 (Evans 1906b).

Rectolejeunea emarginuliflora (Schiffn.) A.Evans, *Bull. Torrey Bot. Club* 33(1): 14, 1906 (Evans 1906b).

≡*Cheilolejeunea emarginuliflora* Schiffn., *Bot. Jahrb. Syst.* 23(5): 585, 1897 (Schiffner 1897). Type: Cuba.

?COSTA RICA. ?HEREDIA: San Miguel de Sarapiquí, 850 m (Eggers 2001 as *Rectolejeunea* cf. *emarginuliflora*); Sarapiquí cantón, La Selva, 100 m (Eggers 2001 as *Rectolejeunea* cf. *emarginuliflora*). ?LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Rectolejeunea* cf. *emarginuliflora*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-191, 92-243, 92-577, 94-1, 94-2* (hb. Lücking, Lücking 1995 as *Rectolejeunea* cf. *emarginuliflora*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (Lücking 1997 as *Rectolejeunea* cf. *emarginuliflora*). Note: We are not aware of any positively identified *Rectolejeunea emarginuliflora* from Costa Rica or Cocos I.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3073* (CR, PMA, **Dauphin et al. 2022**).

?COCOS I. Cerro Yglesias, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-278* (hb. Lücking, Lücking 1995 as *Rectolejeunea* cf. *emarginuliflora*); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 14 Feb 1994, *Dauphin 1107* (USJ-47220!, Dauphin 1995, 1999, both as *Rectolejeunea* cf. *emarginuliflora*; note that this specimen is reidentified as *Rectolejeunea versifolia*); Yglesias-Bucht, Apr 1992, *Lücking 92-280* (hb. Lücking, Lücking 1995 as *Rectolejeunea* cf. *emarginuliflora*). Note: We are not aware of any positively identified *Rectolejeunea emarginuliflora* from Costa Rica or Cocos I.

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Rectolejeunea flagelliformis A.Evans, *Bull. Torrey Bot. Club* 33(1): 9, 1906 (Evans 1906b). Type: Puerto Rico.

BELIZE. S. loc. (**Fulford 1938**; Whittemore and Allen 1996).

HONDURAS. S. loc. (Jovet-Ast 1957, 1959; Winkler 1967; Schäfer-Verwimp et al. 2013). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54841*, *54882 p.p.*, *56777*, *56805 p.p.* (**Zwickel 1932**; **Herzog 1951**; **Reiner-Drehwald and Grolle 2012**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56556* (JE, US, **Herzog 1951**).

EL SALVADOR. SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler B/6/a/6*, *B/6/b/6*, *B/6/c/3*, *B/6/d/7* (**Winkler 1967**).

PANAMA. S. loc., *Schäfer-Verwimp & Verwimp 34286* (JE, **Bechteler et al. 2016a, 2016c**; **Schäfer-Verwimp et al. 2017**; **Zhu et al. 2017, 2018a, 2018b, 2019**; **Ye and Zhu 2018**; **Zhu and Shu 2018**; **Ye and Wei 2021**; **Shu et al. 2022**). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Dauphin 4614* (PMA, **this publication**); Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Magaña-Marcial & Rodríguez 256*, det. Magaña-Marcial Aug 2017 (PMA, **this publication**); Bocas del Toro distrito, Salt Creek, Aug 2017, *Dauphin et al. 4623*, *4624* (PMA, **this publication**); Bocas del Toro distrito, Salt Creek, Long Beach Trail, Aug 2017, *Dauphin et al. 4630*, *4633* (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). COCLÉ: Antón distrito, El Valle de Antón, access to Cerro Gaital 8°37′N, 80°07′W, 700–1,000 m, 31 Mar 2006, *Schäfer-Verwimp & Verwimp 30760* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34136/B*, *34165*, det. (JE, **Schäfer-Verwimp 2014**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre, 400–500 m, *Salazar Allen & Gradstein 9241d* (JE, **Reiner-Drehwald and Grolle 2012**). PANAMA: Panamá distrito, Cerro Jefe, along unpaved road, 9°13.4–5′N, 79°22.7–9′W, 750–1,000 m, 28 Mar 1906, *Schäfer-Verwimp & Verwimp 30720* (JE, **Schäfer-Verwimp 2014**); Panamá distrito, Chagres National Park, Altos de Cerro Azul, Sendero El Cantar, 800 m, *Gradstein 9783* (GOET, **Stotler et al. 1998**); Panamá distrito, Parque National Soberania, sendero Camino de Cruces, 9°06′08″N, 79°36′56″W, 12 Mar 1996, *Reiner-Drehwald 960005* (PMA, GOET, **Reiner-Drehwald and Grolle 2012**). VERAGUAS: S. loc., 890 m, *Schäfer-Verwimp & Verwimp 30818* (JE, **Heinrichs et al. 2015**); Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34277/A*, *34286* (JE, **Schäfer-Verwimp 2014**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Rectolejeunea lindigiana Steph., *Sp. Hepat.* 5: 690, 1914 (Stephani 1914). Lectotype: Colombia.

Note: This is a species of *Lejeunea* of uncertain affinity (cf. Reiner-Drehwald and Grolle 2012), but it has never been transferred or synonymized.

COSTA RICA. S. loc. (**Stephani 1914**; **Geissler and Bischler 1990**); S. loc., *Pittier & Durand* (G, **Reiner-Drehwald and Grolle 2012**).

Also reported from Western South America.

Rectolejeunea versifolia (Schiffn.) L.Söderstr. et A.Hagborg, *Phytotaxa* 220(2): 188 (Söderström et al. 2015).

≡*Cheilolejeunea versifolia* Schiffn., *Bot. Jahrb. Syst.* 23(5): 597, 1897 (Schiffner 1897). Type: Cuba.

=*Odontolejeunea berteroana* Gottsche ex Steph., *Hedwigia* 27(11/12): 282, 1888 (Stephani 1888a), nom. inval. (ICN2018 Art. 35.1; genus not valid).

≡*Rectolejeunea berteroana* A.Evans, *Bull. Torrey Bot. Club* 33(1): 12, 1906 (Evans 1906b), syn. fide Evans (1906b). Lectotype: Puerto Rico.

GUATEMALA. EL PETÉN: S. loc., *Eggers & Timm 1996* (GUA, Pérez 2009 as *Rectolejeunea berteroana*); Flores municipio, Tikal, near the Maya ruins, ~150 m, 1996, *Eggers & Timm GUA 2/20*, det. Eggers (**Eggers et al. 2004** as *Rectolejeunea berteroana*); Flores municipio, Tikal, near the Maya ruins, 150 m, 1996, *Eggers & Timm*, det. Eggers (GUA, **Freire 2006** as *Rectolejeunea berteroana*). IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Rectolejeunea berteroana*).

BELIZE. S. loc. (**Fulford 1938** as *Rectolejeunea berteroana*; Steere 1946 as *Rectolejeunea berteroana*; Frye and Clark 1947 as *Rectolejeunea berteroana*; Schuster 1980d as *Rectolejeunea berteroana*; Fulford and Sharp 1990 as *Rectolejeunea berteroana*; Lücking 1995 as *Rectolejeunea berteroana*; Whittemore and Allen 1996 as *Rectolejeunea berteroana*; Ilkiu-Borges 2000 as *Rectolejeunea berteroana*; Bastos 2004 as *Rectolejeunea berteroana*; Eggers et al. 2004 as *Rectolejeunea berteroana*).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 1927, *Standley 55777* (JE, **Reiner-Drehwald and Grolle 2012** as *Rectolejeunea berteroana*).

COSTA RICA. S. loc. (Ilkiu-Borges 2000 as *Rectolejeunea berteroana*; Eggers et al. 2004 as *Rectolejeunea berteroana*). CARTAGO: Turrialba cantón, Tuis Valley, Rancho Naturalista, 900 m, 30 Jan 2001, *Eggers CR 17/28* (**Eggers et al. 2001** as *Rectolejeunea berteroana*). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Rectolejeunea berteroana*). HEREDIA: Sarapiquí cantón, Puerto Viejo, 100 m, *Eggers*, det. Pócs (hb. Eggers, **Eggers 2001** as *Rectolejeunea berteroana*). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001 as *Rectolejeunea berteroana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-183*, *Lücking 92-377*, *Lücking 92-420*, *Lücking 92-520* (hb. Lücking, **Lücking 1995** as *Rectolejeunea berteroana*); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997** as *Rectolejeunea berteroana*); Pococí cantón, Tortuguero, 1–5 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Rectolejeunea berteroana*). PUNTARENAS: Golfito cantón, Corcovado National Park, Esquinas, <100 m (Eggers 2001 as *Rectolejeunea berteroana*); Golfito cantón, Nationales Refugium Golfito,

50 m, Sep 1991, *Lücking 91-125* (hb. Lücking, **Lücking 1995** as *Rectolejeunea berteroana*); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009** as *Rectolejeunea berteroana*); Golfo Dulce (Eggers 2001 as *Rectolejeunea berteroana*); Golfo Dulce, *Taylor 39-765* (AHFH, MICH, hb. Fulford, **Steere 1946** as *Rectolejeunea berteroana*; **Morales 1991** as *Rectolejeunea berteroana*; **Dauphin 2005** as *Rectolejeunea berteroana*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Rectolejeunea berteroana*); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b** as *Rectolejeunea berteroana*). SAN JOSÉ: Pérez Zeledón cantón, Quizarrá near San Isidro, 700 m, *Eggers* (hb. Eggers, **Eggers 2001** as *Rectolejeunea berteroana*).

PANAMA. S. loc. (Lücking 1995 as *Rectolejeunea berteroana*; Ilkiu-Borges 2000 as *Rectolejeunea berteroana*; Eggers et al. 2004 as *Rectolejeunea berteroana*). CHIRIQUÍ: Boquete, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Rectolejeunea berteroana*; **Stotler et al. 1998** as *Rectolejeunea berteroana*). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Rectolejeunea berteroana*); Cerro Pirre, above Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9247 p.p.* (PMA, **Stotler et al. 1998** as *Rectolejeunea berteroana*); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea berteroana*); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea berteroana*); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea berteroana*); Cerro Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Rectolejeunea berteroana*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3161* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Camino F. Miller, 9°09′N, 79°51′W, *Salazar Allen & Chung 4529* (PMA, **Stotler et al. 1998** as *Rectolejeunea berteroana*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3136* (CR, PMA, **Dauphin et al. 2022**). *PANAMA: Panamá distrito, River Chagres between junction with River Pequeni and Indio, 5 Dec 1934, *Steyermark & Allen 16809 p.p.*, det. Dauphin Jun 2017 (MO-6699930!, **this publication**).

COCOS I. Boca Río Yglesias, 5°32′57″N, 87°03′56″W, 0 m, 14 Feb 1994, *Dauphin 1143*, det. M. I. Morales (USJ, **Dauphin 1995**, **1999**, both as *Rectolejeunea berteroana*); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 549* (USJ, **Bernecker-Lücking 2000** as *Rectolejeunea berteroana*); Wafer Bay, 0 m, Apr 1992, *Lücking 493* (hb. Bernecker, **Bernecker-Lücking 2000** as *Rectolejeunea berteroana*); Serranías al NE de la Isla, 5°32′57″N, 87°03′56″W, 200 m, 14 Feb 1994, *Dauphin 1107* (USJ-47220!, Dauphin 1995, 1999, originally identified as *Rectolejeunea* cf. *emarginuliflora*).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Riccardia Gray, *Nat. Arr. Brit. Pl.* 1: 679, 1821 (Gray 1821).

Riccardia digitiloba (Spruce) Pagán, *Bryologist* 42(1): 6, 1939 (Pagán 1939a).

≡*Aneura digitiloba* Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cci, 1890 (Spruce 1889). Type: Brazil.

=*Aneura metzgeriiformis* Steph., *Bull. Herb. Boissier* 7(10): 753 (=*Spec. Hepat. [Stephani]* 1: 263), 1899 (Stephani 1899e), syn. fide Gradstein and Reeb (2018). Type: Brazil.

≡*Riccardia metzgeriiformis* (Steph.) R.M.Schust., *J. Hattori Bot. Lab.* 26: 295, 1963 (Schuster 1963a).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 8*, *91*, *195*, *231*, *252*, *311*, *410*, *456*, *460*, *478* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** also as *Riccardia* '*metzgeriformis*'). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Riccardia metzgeriiformis*).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Riccardia fucoidea (Sw.) C.Massal., *Nuovo Giorn. Bot. Ital.* 17(3): 256, 1885 (Massalongo 1885).

≡*Jungermannia fucoidea* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

≡*Aneura fucoidea* (Sw.) Besch., *J. Bot. (Morot)* 7(9): 193, 1893 (Bescherelle 1893b).

=*Aneura andina* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 548, 1885 (Spruce 1885), syn. fide Gradstein and Reeb (2018). Lectotype: Peru.

≡*Riccardia andina* (Spruce) Herzog, *Svensk Bot. Tidskr.* 46(1): 62, 1952 (Herzog 1952).

=*Aneura plumiformis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 548, 1885 (Spruce 1885), syn. fide Gradstein and Reeb (2018). Type: Ecuador.

≡*Riccardia plumiformis* (Spruce) Hässel ex Meenks, *Beih. Nova Hedwigia* 88: 101, 1987 (Schultze-Motel and Menzel 1987).

GUATEMALA. S. loc., 1840–1841, *Friedrichstahl*, det. Dauphin and Gradstein Sep 2017 (W-201707325!, **this publication**). ALTA VERAPAZ: Cobán (Haupt 1942 as *Riccardia andina*); Cobán, 1,650 m, Jun 1908, *Türckheim* (G-00061198 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=121330&lang=en, NY, **Stephani 1899c** as *Aneura andina*).

COSTA RICA. S. loc. (Evans 1921a as *Aneura* '*fucoides*'; Pagán 1939a as *Riccardia* '*fucoides*'; Arnell 1959; Hell 1969 as *Riccardia* '*fucoides*'; Timme 1985; Meenks 1987; Schultze-Motel and Menzel 1987 as *Riccardia* '*plumaeformis*'; Morales

1991; Dauphin 2005 also as *Riccardia plumiformis*); S. loc., *Pittier* (**Stephani 1899c** as *Aneura fucoidea* and *Aneura plumiformis*); Cordillera de Talamanca (Holz 2003 as *Riccardia andina*; **Holz and Gradstein 2005b** as *Riccardia andina*); Cordillera de Talamanca, *Kappelle 225* (CR, **Kappelle 1996** as *Riccardia andina*). ALAJUELA: Alajuela cantón, Poás Volcán, *Haupt* (**Morales 1991** as *Riccardia andina*); Poás National Park (Dauphin 2005 as *Riccardia andina*); Poás Volcano, 1942, *Haupt* (**Morales and Griffin 1983** as *Riccardia andina*); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, 2010, *Lucas* (UC-2053925, **Norris et al. 2017** as *Riccardia* '*fucoides*'). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942** as *Riccardia andina*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Riccardia andina*); Dota cantón, San Gerardo (Dauphin 2005 as *Riccardia andina*); Montañas de Tablazo (Dauphin 2005 as *Riccardia andina*); Montañas de Tablazo, *Haupt* (**Morales 1991** as *Riccardia andina*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Riccardia andina*); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000 m, *Salazar Allen et al. 610* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna, *Salazar Allen et al. 670*, *717* (PMA, **Stotler et al. 1998**); Gualaca distrito, Fortuna, *Spörle 1.3* (PMA, **Spörle 1990** as *Riccardia andina*; **Stotler et al. 1998** as *Riccardia andina*); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Riccardia* '*fucoides*'; **Stotler et al. 1998**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,300 m, *Salazar Allen & Gradstein 9306* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**).

***COCOS I.** Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 966*, det. G. Dauphin Oct 2020 (USJ-47252!, CR-4468446!, W-0207484! https://w.jacq.org/W0207484, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Riccardia glaziovii (Spruce) Meenks, *J. Hattori Bot. Lab.* 62: 173, 1987 (Meenks 1987).

≡*Aneura glaziovii* Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cc1, 1890 (Spruce 1889). Type: Brazil.

=*Aneura tripinnata* Steph., *Primit. fl. costar.*: 111, 1893 (Stephani 1893c), syn. fide Stephani (1899c). Lectotype (Söderström et al. 2023a: 150): Costa Rica, Heredia, Forêt du Barba, 6 Feb 1890, *Pittier & Durand 6075* (G-00282017 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=209259&lang=en, isolectotype PC-0101733).

COSTA RICA. HEREDIA: Barva cantón, Barva forest, 6 Feb 1890, *Pittier 6075* (G-00282017 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=209259&lang=en, PC-0101733, **TYPE** of *Aneura tripinnata*, **Stephani 1893c** as *Aneura tripinnata*, **1899c** as *Aneura glaziovii*; **Bonner 1962a** as *Aneura tripinnata*; **Morales 1991** as *Aneura tripinnata*).

Also reported from Western South America, Brazil.

Riccardia hymenophytoides (Spruce) Meenks, *Beih. Nova Hedwigia* 88: 101, 1987 (Schultze-Motel and Menzel 1987).

≡*Aneura hymenophytoides* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 549, 1885 (Spruce 1885). Type: Peru.

=*Aneura sprucei* Steph., *Bull. Herb. Boissier* 5(10): 844, 1897 (Stephani 1897a), syn. fide Gradstein and Reeb (2018). Lectotype: Venezuela.

≡*Riccardia sprucei* (Steph.) Meenks et C.De Jong, *Cryptog. Bryol. Lichénol.* 6(1): 22, 1985 (Meenks and De Jong 1985).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 6*, *22*, *32*, *53*, *93*, *122*, *140*, *204*, *327*, *385*, *395*, *397*, *402*, *435*, *438*, *451*, *498*, *513*, *524* (USCG, **Freire et al. 2013** as *Riccardia sprucei*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Riccardia sprucei*). ?EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Riccardia* aff. *sprucei*). Note: We are not aware of any positively identified specimen from El Progreso. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Riccardia* aff. *sprucei*). Note: We are not aware of any positively identified specimen from Izabal. ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Riccardia* aff. *sprucei*). Note: We are not aware of any positively identified specimen from Zacapa.

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Riccardia sprucei*). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998 as *Riccardia sprucei*); Panamá distrito, Cerro Jefe, *Spörle 5220* (PMA, **Spörle 1990** as *Riccardia sprucei*); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Salazar Allen & Chung 5220* (PMA, **Stotler et al. 1998** as *Riccardia sprucei*).

Also reported from Mexico(?), the Caribbean, Northern South America, Western South America, Brazil.

Riccardia pallida (Spruce) Meenks et C.De Jong, *Cryptog. Bryol. Lichénol.* 6(1): 15, 1985 (Meenks and de Jong 1985).

≡*Aneura pallida* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 547, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. Cordillera de Talamanca, *Kappelle 3392* (U, **Kappelle 1996**).

Also reported from Northern South America, Western South America.

Riccardia poeppigiana (Lehm. et Lindenb.) Hässel ex Meenks et C.De Jong, *Cryptog. Bryol. Lichénol.* 6(1): 17, 1985 (Meenks and De Jong 1985).

≡*Jungermannia poeppigiana* Lehm. et Lindenb., *Nov. Stirp. Pug.* 6: 23, 1834 (Lehmann 1834). Type: Peru.

=*Aneura cervicornis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 550, 1885 (Spruce 1885), syn. fide Gradstein and Reeb (2018). Lectotype: Ecuador.

≡*Riccardia cervicornis* (Spruce) Herzog ex Gradst. et Hekking, *J. Hattori Bot. Lab.* 45: 129, 1979 (Gradstein and Hekking 1979).

COSTA RICA. S. loc. (Meenks 1987 as *Riccardia cervicornis*); S. loc., *Pittier* (**Stephani 1899c** as *Aneura cervicornis*). HEREDIA: Barva cantón, between Laguna de Barva and Carrizal, *Pittier 6015* (**Stephani 1893c** as *Aneura cervicornis*; **Morales 1991** as *Riccardia cervicornis*; **Dauphin 2005** as *Riccardia cervicornis*).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna (Stotler et al. 1998 as *Riccardia cervicornis*); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.29* (PMA, **Spörle 1990** as *Riccardia cervicornis*; **Stotler et al. 1998** as *Riccardia cervicornis*). DARIÉN: Cerro Pirre (Stotler et al. 1998 as *Riccardia cervicornis*); Cerro Pirre, 1,300 m, *Salazar Allen & Gradstein 9307* (PMA, **Stotler et al. 1998** as *Riccardia cervicornis*); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Riccardia cervicornis*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Southern South America.

Riccardia regnellii (Ångstr.) K.G.Hell, *Bol. Fac. Filos. Univ. São Paulo, Bot.* 25: 110, 1969 (Hell 1969).

≡*Pseudoneura regnellii* Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 33(7): 90, 1876 (Ångström 1876). Type: Brazil.

=*Aneura amazonica* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 545, 1885 (Spruce 1885). Lectotype: Brazil.

≡*Riccardia amazonica* (Spruce) Schiffn. ex Gradst. et Hekking, *J. Hattori Bot. Lab.* 45: 129, 1979 (Gradstein and Hekking 1979).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Riccardia* cf. *regnellii*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Riccardia amazonica*).

PANAMA. BOCAS DEL TORO: Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). PANAMA WEST: La Chorrera distrito, Barro Colorado, Barbour Point, 2003, *Dauphin 3154* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Fairchild, 2003, *Dauphin 3139* (CR, PMA, **Dauphin et al. 2022**).

***COCOS I.** Camino a Cerro Escondido, 5°32′57″N, 87°03′36″W, 300 m, *Dauphin 1145*, det. G. Dauphin Apr 2021 (USJ-47255!, CR-446841!, W-0207486! https://w.jacq.org/W0207486, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′36″W, 600 m, 22 Jan 1994, *Dauphin 984*, det. G. Dauphin Oct 2020 (USJ-47253!, CR-4468444!, W-0207485! https://w.jacq.org/W0207485, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 985*, det. G. Dauphin Oct 2020 (USJ-47251!, CR-4468445!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 22 Jan 1994, *Dauphin 985*, det. G. Dauphin Oct 2020 (CR!, **this publication** as *Riccardia amazonica*); Fila sobre Valle Wafer, 5°32′57″N, 87°03′36″W, 150 m, 26 Jan 1994, *Dauphin 1064*, det. G. Dauphin Apr 2021 (USJ-47254!, CR-4468442!, W-0207488! https://w.jacq.org/W0207488, **this publication**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Riccardia schwaneckei (Steph.) Pagán, *Bryologist* 42(1): 7, 1939 (Pagán 1939a).

≡*Aneura schwaneckei* Steph., *Hedwigia* 27(11/12): 278, 1888 (Stephani 1888a). Type: Puerto Rico.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 441* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Northern South America, Brazil, Southern South America.

Riccardia tenuicula (Spruce) Meenks, *Beih. Nova Hedwigia* 88: 101, 1987 (Schultze-Motel and Menzel 1987).

≡*Aneura tenuicula* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 545, 1885 (Spruce 1885). Type: Brazil.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from Western South America, Brazil, Southern South America.

***Riccia* L., *Sp. Pl.* 1: 1138, 1753 (Linnaeus 1753).**

Riccia bialbistrata Hässel, *Opera Lilloana* 7: 243, 1962 (Hässel 1962). Type: Argentina.

COSTA RICA. SAN JOSÉ: À la sortie de San José, 1,200 m, 12 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981**); San José cantón, cemetière central, 1,200 m, 15 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981**; **Morales 1991**; **Dauphin 2005**).

Also reported from Southern South America.

Riccia breutelii Hampe ex Steph., *Bull. Herb. Boissier* 6(4): 325 (=*Spec. Hepat. [Stephani]* 1: 17), 1898 (Stephani 1898a). Type: St. Kitts.

COSTA RICA. S. loc. (Gradstein et al. 1994). GUANACASTE: La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla San José, 3 Jul 1932, *Howell 240* (NY, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**; Dauphin and Grayum 2005); Santa Cruz cantón, Bahía Brasilito, 0–150 m, *Howell 238*, *239* (NY, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Riccia curtisii (James ex Austin) Austin, *Bull. Torrey Bot. Club* 6(52): 305, 1879 (Austin 1879).

≡*Cryptocarpus curtisii* James ex Austin, *Proc. Acad. Nat. Sci. Philadelphia* 21: 231, 1869 (Austin 1869). Type: USA.

COSTA RICA. S. loc. (Gradstein et al. 2001b; Gradstein and Costa 2003). SAN JOSÉ: Granadilla de Montes de Oca, *Jovet-Ast* (**Morales 1991**; **Dauphin 2005**); Granadilla, N of Montes de Oca, 1,400 m, 10 Sep 1979, *Melendez-Howell* (PC, **Jovet-Ast 1981, 1993**; **Bischler-Causse et al. 2005**); Montes de Oca (Gradstein 2013b, 2017b).

Also reported from Southwestern Europe, Northeast Tropical Africa, Southern Africa, Indian Subcontinent, South-Central USA, Southeastern USA, Brazil, Southern South America.

Riccia elliottii Steph., *Bull. Herb. Boissier* 6(4): 324 (=*Spec. Hepat. [Stephani]* 1: 16), 1898 (Stephani 1898a). Type: Dominica.

COSTA RICA. S. loc. (Cole 1984; Bischler-Causse et al. 2005). GUANACASTE: La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla San José, 3 Jul 1932, *Howell 240* (NY, **Howe 1934**; **Jovet-Ast 1991**; **Dauphin 2005**); Santa Cruz cantón, Bahía Brasilito, 0–150 m, *Howell 238*, *239* (NY, **Howe 1934**; **Jovet-Ast 1991**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean.

Riccia membranacea Gottsche et Lindenb., *Syn. Hepat.* 4: 608, 1846 (Gottsche et al. 1846). Type: Mexico.

COSTA RICA. S. loc. (Infante and Heras 2002). GUANACASTE: La Cruz cantón, Santa Rosa National Park, *Dauphin 2430* (CR, **Dauphin 2005**). SAN JOSÉ: Montes de Oca cantón, San Pedro, *Jovet-Ast* (**Morales 1991**); Montes de Oca cantón, San Pedro, 1,200 m, 10 Sep 1979, *Leda Meléndez* (**Jovet-Ast 1993**); Montes de Oca cantón, San Pedro, 1,200 m, 10 Sep 1979, *Melendez-Howell* (PC, **Jovet-Ast 1981**; **Bischler-Causse et al. 2005**); San José cantón, Barrio Mexico, 14 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1981, 1993**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**); San José cantón, Paso Ancho, 9 Sep 1979, *Melendez-Howell* (PC, **Jovet-Ast 1981**; **Bischler-Causse et al. 2005**); Santa Ana cantón, Paso Ancho, 1,200 m, 9 Sep 1979, *Jovet-Ast* (**Morales 1991**); Santa Ana cantón, Paso Ancho, 1,200 m, 9 Sep 1979, *Leda Meléndez* (**Jovet-Ast 1993**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Antarctic Continent(?).

Riccia oerstediana Lindenb. et Hampe, *Linnaea* 24: 304, 1851 (Hampe 1851b). Lectotype (Jovet-Ast 1993: 243; see also Söderström et al. 2023a: 155): Costa Rica, *Oersted* (G-00281751 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=341810&lang=en, isolectotypes G, S).

≡*Ricciella oerstediana* (Lindenb. et Hampe) Müll.Hal., *Bot. Zeitung (Berlin)* 9(48): 914, 1851 [Dec 26] (Müller 1851).

=*Riccia stenophylla* Spruce, *Bull. Soc. Bot. France (Congr. Bot.)* 36: cxcv, 1889 (Spruce 1889), syn. fide Bischler-Causse et al. (2005). Type: Paraguay.

Note: This species may be a synonym of the widespread *Riccia fluitans*.

GUATEMALA. S. loc. (Fernandes et al. 2021 as *Riccia stenophylla*). SUCHITEPÉQUEZ: Naranjo, N of Chicacao, *Hürlimann 518* (PC, **Jovet-Ast 1993** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*; **Pérez 2009** as *Riccia stenophylla*).

?NICARAGUA. S. loc. (Fernandes et al. 2021 as *Riccia stenophylla*). Note: We are not aware of any firsthand report from Nicaragua.

COSTA RICA. S. loc. (Fernandes et al. 2021 as *Riccia stenophylla*); S. loc., 5,000–8,000 ft (1,524–2,438 m), *Oersted 1169* (S-B58739, G-00282693, **TYPE, Hampe 1851b**; **Müller 1851** as *Ricciella oerstediana*; **Polakowsky 1879** as *Riccia* 'Ørstediana'; **Geissler and Bischler 1990**; **Jovet-Ast 1993** as *Riccia stenophylla*). ALAJUELA: S. loc., 1,000 m, 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005** as *Riccia stenophylla*); S. loc., 1,000 m, 11 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*, **1993** as *Riccia stenophylla*); Alajuela cantón, Alajuela city, *Jovet-Ast* (**Morales 1991** as *Riccia stenophylla*; **Dauphin 2005** as *Riccia stenophylla*). CARTAGO: La Unión cantón, Tres Ríos y Turrialba, *Jovet-Ast* (**Morales 1991** as *Riccia stenophylla*; **Dauphin 2005** as *Riccia stenophylla*); La Unión cantón, Trés Rios, 1,600 m, 4 Sep 1979, *Melendez-Howell* (**Jovet-Ast 1993** as *Riccia stenophylla*); Turrialba cantón, CATIE, 600 m, 13 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981, 1993**, both as *Riccia stenophylla*); Turrialba, 13 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1993** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*). SAN JOSÉ: S. loc., 12 Aug 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005** as *Riccia stenophylla*); à la sortie de San José, 1,200 m, 12 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*); La Unión cantón, San Ramón de Tres Ríos, 1,600 m, 1976–1979, *Meléndez* (PC, **Jovet-Ast 1981** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*); San José cantón, cemetière central, 1,200 m, 15 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*, **1993** as *Riccia stenophylla*); San José cantón, dans la cour de l'ITCO, 22 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*); San José cantón, dans la ville, 1,200 m, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*); San José cantón, Jardín du Musée d'Histoire Naturelle,

24 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981** as *Riccia stenophylla*); San José cantón, Paso Ancho, 9 Sep 1979, *Melendez-Howell* (PC, **Jovet-Ast 1981, 1993**, both as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*); Santa Ana cantón, El Rodeo, 26 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1981, 1993**, both as *Riccia stenophylla*; **Morales 1991** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*; **Dauphin 2005** as *Riccia stenophylla*); Santa Ana cantón, Paso Ancho, 1,200 m, 9 Sep 1979, *Jovet-Ast* (**Morales 1991** as *Riccia stenophylla*; **Dauphin 2005** as *Riccia stenophylla*); Santa Ana, 1979, *Meléndez* (PC, **Jovet-Ast 1981** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*); Santa Ana, 8 Sep 1979, *Melendez-Howell* (**Jovet-Ast 1993** as *Riccia stenophylla*).

PANAMA. S. loc. (Fernandes et al. 2021 as *Riccia stenophylla*). COCLÉ: Antón distrito, El Valle de Antón, Rio de las Mozas, 500 m, *Salazar Allen et al. 13498* (**Jovet-Ast 1993** as *Riccia stenophylla*; **Stotler et al. 1998** as *Riccia stenophylla*; **Bischler-Causse et al. 2005** as *Riccia stenophylla*).

Also reported from North-Central USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean(?), Western South America, Brazil, Southern South America.

Riccia sorocarpa Bisch., *Bem. Leberm.*: 145, 1835 (Bischoff 1835). Type: Germany.

COSTA RICA. S. loc. (Gradstein and Cuvertino 2015). CARTAGO: Cartago cantón, Taras, road from Cartago to Turrialba, 1,500 m, 13 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1981, 1991**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Northeast Tropical Africa, East Tropical Africa, Southern Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia, Indian Subcontinent, Australia, New Zealand, Northeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean(?), Western South America, Brazil, Southern South America.

Riccia subplana Steph., *Symb. Antill. (Urban)* 3(2): 275, 1902 (Stephani 1902d). Type: Martinique.

GUATEMALA. S. loc. (Infante and Heras 2002; Ayub et al. 2014). SUCHITEPÉQUEZ: Naranjo, 24 Dec 1955, *Hürlimann H 520* (hb. Hürlimann, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Pérez 2009**).

COSTA RICA. S. loc. (Infante and Heras 2002; Gradstein and Costa 2003; Ayub et al. 2014). ALAJUELA: S. loc., 1,000 m, 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005**; **Dauphin 2005**); S. loc., 1,000 m, 11 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1991**); Atenas, 16 Sep 1979, *Meléndez* (PC, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**). CARTAGO: Turrialba cantón, CATIE, 600 m, 13 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1991**; **Dauphin 2005**); Turrialba, 13 Aug 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005**). GUANACASTE: Cañas cantón, La Pacífica, 1956, *Hürlimann* (**Dauphin 2005**); Cañas, 30 m, 17 Oct 1956, *Hürlimann* (hb. Hürlimann, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**); Liberia, 21 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**). SAN JOSÉ: NW of San José, 10 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1991**); W of San José, 30–1,000 m, 13 Aug 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Riccia vitalii Jovet-Ast, *Mem. New York Bot. Gard.* 45: 285, 1987 (Jovet-Ast 1987). Type: Brazil.

COSTA RICA. S. loc. (Gradstein and Costa 2003; Alvarenga et al. 2008; Valente 2010; Gradstein et al. 2016; Silva et al. 2018; Fernandes et al. 2021; Gradstein 2021; Gradstein and Pérez 2021). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3371* (CR, **Dauphin and Grayum 2005**); La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla Catalina, *Dauphin & Morales 3275*, *3278*, *3279*, *3281* (CR, **Dauphin 2005**); La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla Cocinera, *Dauphin et al. 3284*, *3371*, *3372*, *3379* (CR, **Dauphin 2005**); La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla San José, *Dauphin et al. 3255*, *3258* (CR, **Dauphin 2005**); La Cruz cantón, Guanacaste National Park, Sector Islas Murciélago, Isla San José, 3 Jul 1932, *Howell 240* (NY, **Jovet-Ast 1991**; Gradstein et al. 1994; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

Also reported from Western South America, Brazil, Southern South America.

Riccia weinionis Steph., *Bull. Herb. Boissier* 6(4): 326 (=*Sp. Hepat. [Stephani]* 1: 18), 1898 (Stephani 1898a). Type: Brazil.

COSTA RICA. S. loc. (Linares and Uribe 2002; Lavocat Bernard et al. 2009; Silva et al. 2018). GUANACASTE: Cañas cantón, La Pacífica, 17 Oct 1956, *Hürlimann H 521* (hb. Hürlimann, **Jovet-Ast 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**); La Cruz cantón, Santa Rosa National Park, 21 Aug 1979, *Jovet-Ast* (PC, **Jovet-Ast 1981, 1991**; **Morales 1991**; **Bischler-Causse et al. 2005**; **Dauphin 2005**).

PANAMA. S. loc. (Linares and Uribe 2002; Lavocat Bernard et al. 2009). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Chung et al. 205* (PMA, **Jovet-Ast 1991**; **Stotler et al. 1998**; **Bischler-Causse et al. 2005**; **Dauphin et al. 2022**).

Also reported from Mexico, the Caribbean, Western South America, Brazil, Southern South America.

***Ricciocarpos* Corda, *Gen. Hepat.*: 651, 1829 (Corda 1829).**

Ricciocarpos natans (L.) Corda, *Gen. Hepat.*: 651, 1829 (Corda 1829).

≡*Riccia natans* L., *Syst. Nat., ed. 10.*, 2: 1339, 1759 (Linnaeus 1759). Type: Britain.

PANAMA. S. loc. (**Balciunas and Center 1981**; Gradstein et al. 2001b; Gradstein and Costa 2003). COLÓN: Colón distrito, Juan Mina, Chagres River, *Bartlett & Lasser 16828* (NY, **Bischler-Causse et al. 2005**). ?DARIÉN: Cerro Pirre (Stotler et al. 1998). Note: We are not aware of any firsthand report from Darién. LOS SANTOS: Los Santos distrito, La Jagua, *McDaniel 8223* (NY, **Bischler-Causse et al. 2005**). PANAMA WEST: La Chorrera distrito, Lago Gatún, *Vergara & Mendoza* (PMA, **Stotler et al. 1998**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, New Zealand, Northeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Ruizanthus R.M.Schust., *Phytologia* 39(4): 240, 1978 (Schuster 1978a).

Ruizanthus venezuelanus R.M.Schust., *Phytologia* 39(4): 240, 1978 (Schuster 1978a). Type: Venezuela.

COSTA RICA. S. loc. (Schuster 1990; León et al. 1998; Gradstein 1999a; Gradstein and Holz 2005; Campos and Uribe 2012; Gradstein and Uribe 2016; Gradstein 2021; Gradstein and Pócs 2021; Schuster 2021); Cordillera de Talamanca (Gradstein et al. 2001b; Engel and Gradstein 2003; Holz 2003; **Holz and Gradstein 2005b**). SAN JOSÉ: Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000–3,600 m, *Gradstein 9747 p.p.* (**Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,000 m, *Gradstein 9747* (U, USJ, **Gradstein et al. 1994**); Pérez Zeledón cantón, Chirripó National Park, Valle de los Conejos, *Chaverri et al. 1207* (CR, U, **van Reenen et al. 1986**; **Morales 1991**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Scapania (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

Scapania portoricensis var. ***boliviensis*** (Steph.) Herzog, *Ann. Bryol.* 1: 110, 1928 (Herzog 1928).

≡*Scapania boliviensis* Steph., *Biblioth. Bot.* 87(2): 231, 1916 (Stephani 1916b). Lectotype: Bolivia.

COSTA RICA. S. loc. (Hong 1988). SAN JOSÉ: Moravia cantón, La Palma, 1,600 m, 3 Feb 1924, *Standley 32989* (**Herzog 1928**).

Also reported from Mexico, Western South America.

Scapania portoricensis Hampe et Gottsche, *Linnaea* 25(3): 342 (Hampe and Gottsche 1852) var. ***portoricensis***. Lectotype: Puerto Rico.

=*Scapania portoricensis* f. *integrifolia* Müll.Frib., *Bull. Herb. Boissier*, sér. 2, 1(6): 605 [*Vorarb. Monogr. Scapania*: 13], 1901 (Müller 1901). Type: Colombia.

=*Scapania portoricensis* f. *gemmipara* Herzog, *Ann. Bryol.* 1: 108, 1928 (Herzog 1948), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Las Nubes, province of San José, altitude about 1,500 to 1,900 m, 20–22 Mar 1924, *Standley 38452* (US-04639083 http://n2t.net/ark:/65665/37a30af1a-9c1c-47c0-b512-0e18d5520297).

=*Scapania portoricensis* f. *grossealata* Herzog, *Ann. Bryol.* 1: 108, 1928 (Herzog 1948), syn. fide Herzog (1948). Lectotype: Jamaica.

=*Scapania portoricensis* var. *typica* Herzog, *Ann. Bryol.* 1: 108, 1928 (Herzog 1948), nom. inval. (ICN2018 Art. 26.1; type of species included).

GUATEMALA. S. loc. (Fulford and Sharp 1990). ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 248*, *454*, *477*, *521*, *522* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: Todos Santos Cuchumatán, Chinhuitz, 15°30′40″N, 91°38′56″W, 2,790 m, 2006, *Pérez 1195* (USCG, Pérez 2009).

HONDURAS. S. loc. (Fulford and Sharp 1990). CORTÉS: San Pedro Sula municipio, Cusuco National Park, Cusuco NP, *Allen 14279* (GOET, **Heinrichs et al. 2012b**).

COSTA RICA. S. loc. (Cole 1982, 1983; Hong 1988 also as f. *grossealata* and f. *integrifolia*; Fulford and Sharp 1990; **Geissler and Bischler 1990** as *Scapania portoricensis* f. *gemmipara*; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009); Cordillera de Talamanca (**Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 4630* (U, **Kappelle 1996** as *Scapania portoricensis* f. *gemmipara*). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Morales 166* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**). GUANACASTE: Liberia cantón, Guanacaste National Park, Estación Cacao, 10°55′45″N, 85°28′15″W, *Dauphin 1870* (CR, **Dauphin 2005**); Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 2572* (CR, **Dauphin 2005**). HEREDIA: San Isidro cantón, Cerro de las Caricias, N of San Isidro, 2,000–2,400 m, 11 Mar 1926, *Standley 52115*, *52163* (B-15329, **Herzog 1928** as *Scapania portoricensis* var. *typica*; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, ~2,000–2,400 m, *Standley 51639* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro de Las Lajas, N of San Isidro, ~2,000–2,400 m, 7 Mar 1926, *Standley 51643* (**Herzog 1928** as *Scapania portoricensis* var. *typica*, **1951**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, 3 Mar 1926, *Standley 50282*, *50517* (**Herzog 1928** as *Scapania portoricensis* var. *typica*, **1951**; **Morales 1991**; **Dauphin 2005**). LIMÓN: Chirripó, *Dauphin 1246* (GOET, **Heinrichs et al. 2012b**); Talamanca cantón, Bratsi, Valle del Silencio, *Quesada 1520* (CR, **Dauphin 2005**); Talamanca cantón, Quebrada Kuisa, *Bittner*

1870 (CR, **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde, <1,500 m (Morales 1991; Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Monteverde, *James, W. 23923* (**Dauphin 2005**); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-07* (US, **Reed and Robinson 1971**); Puntarenas cantón, Brillante, 25 Jul 1966, *James, W.* (R, **Reed and Robinson 1971**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, 13 Feb 1926, *Standley 48218* (**Herzog 1928** as *Scapania portoricensis* f. *grossealata*, **1951**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, 3 Feb 1924, *Standley 32989* (**Herzog 1951**; **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38027* (**Herzog 1928** as *Scapania portoricensis* f. *grossealata*, **1951**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20–22 Mar 1924, *Standley 38452* (**Herzog 1928, 1951,** both as *Scapania portoricensis* f. *gemmipara*; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20–22 Mar 1924, *Standley 38454* (B-15328, **Herzog 1928** as *Scapania portoricensis* var. *typica*, **1951**; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Spörle* (PMA, **Stotler et al. 1998**); Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3505* (ABSH, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Schiffneriolejeunea Verd., *Ann. Bryol.* 6: 89, 1933 (Verdoorn 1933).

Schiffneriolejeunea polycarpa (Nees) Gradst., *J. Hattori Bot. Lab.* 38: 335, 1974 (Gradstein 1974).

≡*Jungermannia polycarpa* Nees, *Fl. Bras. (Martius)* 1(1): 350, 1833 (Nees 1833b). Type: Brazil.

≡*Ptychocoleus polycarpus* (Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 405, 1877 (Trevisan 1877).

BELIZE. S. loc. (Whittemore and Allen 1996; Bastos 2004); S. loc., 1910, *Hunt* (BM, **Gradstein 1994**).

HONDURAS. S. loc. (Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 54384* (JE, **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55255* (JE, **Herzog 1951** as *Ptychocoleus polycarpus*; **Gradstein 1994**).

***NICARAGUA.** *BOACO: Camoapa municipio, 5 km N of El Zancudo empalme, road from Cuapa to Camoapa, 12°20′02″N, 85°23′57″W, 10 Dec 2012, *Stevens 33360 p.p.*, det. Dauphin May 2017 (MO-6699938! http://tropicos.org/specimen/100988175, **this publication**). *CHONTALES: La libertad municipio, road to Betulia, 12°12′54″N, 85°16′24″W, 12 May 2011, *Stevens 31522 p.p.*, det. Dauphin May 2017 (MO-6699902! http://tropicos.org/specimen/100988688, **this publication**). *ESTELÍ: Estelí municipio, ~5.9 km beyond Rio Estelí, road between Hwy 1 and Laguna Miraflores, 13°15′N, 86°18′W, 19 May 1981, *Stevens 20262-B*, det. Dauphin May 2017 (MO-5228163! http://tropicos.org/specimen/90103078, **this publication**); Estelí municipio, Estelí–Laguna Miraflores road, 7 km W of Laguna entrance, 7 May 2010, *Magill 14009 p.p.*, det. Dauphin May 2017 (MO-6699942! http://tropicos.org/specimen/100988182, **this publication**).

COSTA RICA. S. loc. (Bastos 2004). LIMÓN: Talamanca cantón, road along the Caribbean coast from Limón to Cahuita, 0 m, *Sipman 12298b* (U, **Gradstein 1994**; **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,340–1,350 m, *Schäfer-Verwimp & Verwimp 34336*, *34340* (JE, **Schäfer-Verwimp 2014**); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Ptychocoleus polycarpus*; Stotler et al. 1998, stating "needs verification"). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31048* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34268* (JE, **Schäfer-Verwimp 2014**).

COCOS I. Fila despues de Mirador a Bahia Wafer, 250 m, 14 Feb 1994, *Dauphin A-5* (USJ, **Dauphin 1995, 1999**); Mirador a Bahía Wafer, 5°32′57″N, 87°03′36″W, 250 m, *Dauphin A-5*, det. G. Dauphin Feb 2021 (USJ-47639!, CR-4468149!, W-0207489! https://w.jacq.org/W0207489, **this publication**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, China, Indian Subcontinent, Indo-China, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Schistochilopsis (N.Kitag.) Konstant., *Arctoa* 3: 125 (Konstantinova and Vasiljev 1994).

Schistochilopsis incisa (Schrad.) Konstant., *Arctoa* 3: 125, 1994 (Konstantinova and Vasiljev 1994).

≡*Jungermannia incisa* Schrad., *Syst. Samml. Crypt. Gew.* 2: 5, 1797 (Schrader 1797). Lectotype: Germany.

≡*Lophozia incisa* (Schrad.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

GUATEMALA. HUEHUETENANGO: S. loc., 1 Jan 1946, *Sharp 4949* (TENN, **Gradstein and** Váňa **1987** as *Lophozia*

incisa). QUETZALTENANGO: San Carlos Sija municipio, Getenagre near Sija, 9,500 ft (2,896 m), 1 Jan 1945, *Sharp 1133* (TENN, **Gradstein and** Váňa **1987** as *Lophozia incisa*).

COSTA RICA. S. loc. (Gradstein 1999a as *Lophozia incisa*; Dauphin 2005 as *Lophozia incisa*; Gradstein and Holz 2005 as *Lophozia incisa*); Cordillera de Talamanca (Holz 2003 as *Lophozia incisa*; **Holz and Gradstein 2005b** as *Lophozia incisa*). CARTAGO: Talamanca cantón, Chirripó National Park, Lago Dikevi, *Dauphin & Valerio 1249a* (**Dauphin 2005** as *Lophozia incisa*). LIMÓN: Talamanca cantón, Chirripó National Park, Lago Dikevi, 3,600 m, *Dauphin 1249a* (U, USJ, **Gradstein et al. 1994** as *Lophozia incisa*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, Northern South America, Western South America.

Solenostoma Mitt., *J. Proc. Linn. Soc., Bot.* 8(29): 51, 1865 (Mitten 1865).

Solenostoma amoenum (Lindenb. et Gottsche) R.M.Schust. ex Váňa, Hentschel et Heinrichs, *Cryptog. Bryol.* 31(2): 136, 2010 (Váňa et al. 2010a).

≡*Jungermannia amoena* Lindenb. et Gottsche, *Syn. Hepat. 5*: 674, 1847 (Gottsche et al. 1847). Type: Mexico.

=*Solenostoma costaricanum* Bakalin, *Polish Bot. J.* 58(1): 128, 2013 (Bakalin 2013), syn. fide Váňa et al. (2013a). Holotype: Costa Rica: Alajuela, Calera de San Ramón, 29 Jan 1934, *A. M. Brenes 19033* (NY-636521 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=486984).

GUATEMALA. ALTA VERAPAZ: S. loc., *Pérez 84* (USCG, Pérez 2009 as *Jungermannia amoena*); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006** as *Jungermannia amoena*).

COSTA RICA. ALAJUELA: San Ramón cantón, Calera, 29 Jan 1934, *Brenes 19033* (NY-636521 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=486984, **TYPE** of *Solenostoma costaricanum*, **Bakalin 2013** as *Solenostoma costaricanum*; Váňa **et al. 2013a**; **Söderström et al. 2016b** as *Solenostoma costaricanum*).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Solenostoma amplexifolium (Hampe) Váňa et Schäf.-Verw., *Acta Bot. Hung.* 51(3/4): 408, 2009 (Schäfer-Verwimp and Pócs 2009).

≡*Plagiochila amplexifolia* Hampe, *Nov. Stirp. Pug.* 7: 6, 1838 (Lehmann 1838). Type: St. Vincent.

≡*Jungermannia amplexifolia* (Hampe) Grolle, *J. Hattori Bot. Lab.* 67: 249, 1989 (Grolle 1989a).

=*Jungermannia linguifolia* Gottsche, *Mexik. Leverm.*: 86, 1863 (Gottsche 1863), syn. fide Grolle (1989a). Type: Mexico.

≡*Haplozia linguifolia* (Gottsche) Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 6, 1939 (Herzog 1938).

≡*Solenostoma linguifolium* (Gottsche) R.M.Schust., *Beih. Nova Hedwigia* 119: 381, 2002).

GUATEMALA. QUICHÉ: 5 km E of Los Cinquentros, highway between Chimaltenango and Quetzaltenango, 2,500 m, 25 Jan 1974, *Richards & Williams 2942*, det. Vána (TENN, **Blockeel et al. 2010**). SAN MARCOS: N of Palestina, 9,000 ft (2,743 m), 16 Feb 1945, *Sharp 2633* (TENN, **Blockeel et al. 2010**).

HONDURAS. S. loc. (Fulford and Sharp 1990 as *Jungermannia linguifolia*; Schuster 2002 as *Solenostoma linguifolium*; Lavocat Bernard et al. 2009 as *Jungermannia linguifolia*; Schäfer-Verwimp and Pócs 2009; Blockeel et al. 2010). COMAYAGUA: Siguatepeque, 1,080–1,400 m, 1928, *Standley 56369* (**Herzog 1938** as *Haplozia* '*linguaefolia*'; Váňa **1974b** as *Jungermannia linguifolia*). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, Rio Cusuco, 15°31′N, 88°14′W, 18 Mar 1993, *Allen 14130 p.p.*, det. Dauphin Jun 2017 (MO-6699918!, **this publication**); San Pedro Sula municipio, from Rio Cusuco to Cerro Cantiles, 19 Mar 1993, *Allen 14173*, det. Whittemore 1994 (MO-3982141!, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009; Blockeel et al. 2010). ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Jungermannia linguifolia*); Poás Volcano, Aug 1977, *Griffin et al. 100* (FLAS-020508, **Morales and Griffin 1983** as *Jungermannia linguifolia*; **Morales 1991** as *Jungermannia linguifolia*; **Dauphin 2005** as *Jungermannia amplexifolia*).

PANAMA. CHIRIQUÍ: Tierras Altas distrito, Volcán, road to Rio Sereno, 8°49.5′N, 82°41.5′W, 1,580 m, 3 Apr 2009, *Schäfer-Verwimp & Verwimp 34672*, det. Vána (JE, PRC, **Ellis et al. 2015b**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Solenostoma callithrix (Lindenb. et Gottsche) Steph., *Bull. Herb. Boissier*, sér. 2, 1(2): 486 (=*Spec. Hepat. [Stephani]* 2: 48), 1901 (Stephani 1901f).

≡*Jungermannia callithrix* Lindenb. et Gottsche, *Syn. Hepat. 5*: 673, 1847 (Gottsche et al. 1847). Type: Mexico.

GUATEMALA. S. loc. (Fulford 1987 as *Jungermannia callithrix*; Fulford and Sharp 1990 as *Jungermannia callithrix*; Schäfer-Verwimp and Pócs 2009 as *Jungermannia callithrix*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 209* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Jungermannia callithrix*). SACATEPÉQUEZ: Cuesta de la Cañas, 1936, *Standley* (Hb. Grolle, Váňa **1974b** as *Jungermannia callithrix*); Volcán de Fuego, *Godman* (NY, Pérez 2009 as *Jungermannia callithrix*).

***HONDURAS.** *CORTÉS: San Pedro Sula municipio, Cusuco National Park, along Rio Cusuco, ~22 km W of San Pedro Sula, 15°31′N, 88°14′W, 1,500 m, 18 Mar 1993, *Allen*

14130, det. Whittemore 1994 (MO-3982139! http://tropicos.org/specimen/90019184, **this publication**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Jungermannia callithrix*). CARTAGO: Oreamuno cantón, Irazú National Park, outer limits of the park, 9°58′45″N, 83°50′50″W, 3,200 m, *Dauphin & Morales 1923* (CR, **Dauphin et al. 1998** as *Jungermannia callithrix*; **Dauphin 2005** as *Jungermannia callithrix*); Turrialba cantón, Volcán Turrialba, S slope, 18 Aug 1991, *King C-91-83*, det. Dauphin Jun 2017 (MO-3966588!, **this publication**). *PUNTARENAS: Monteverde cantón, from Estación Biológica, 10°18′N, 84°48′W, 24 Mar 1992, *Lyon 463*, det. Whittemore 1995 (MO-4423832!, **this publication**).

PANAMA. S. loc. (Schäfer-Verwimp and Pócs 2009 as *Jungermannia callithrix*; Ellis et al. 2015b). CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3506* (ABSH, PMA, hb. Vána, **Stotler et al. 1998** as *Jungermannia callithrix*).

Also reported from Macaronesia, Mexico, the Caribbean, Northern South America, Western South America, Southern South America.

*****Solenostoma decolor*** (Schiffn.) R.M.Schust. ex Váňa, Hentschel et Heinrichs, *Cryptog. Bryol.* 31(2): 136, 2010 (Váňa et al. 2010a).

≡*Jungermannia decolor* Schiffn., *Leberm., Forschungsr. Gazelle* 4: 10, 1890 (Schiffner 1890). Type: Chile.

***COSTA RICA.** *CARTAGO: Turrialba cantón, Turrialba National Park, 2,550 m, 12 Jul 2006, *Dauphin et al. 3555* (CR!, **this publication**).

***PANAMA.** *CHIRIQUÍ: Boquete distrito, road to summit of Volcán Barú, 8°45′N, 82°30′W, 1,800–3,400 m, 13 May 1990, *Allen 9144*, det. Whittemore 1990 (MO-3678097!, **this publication**).

Also reported from Mexico, Northern South America, Western South America, Brazil, Southern South America.

*****Solenostoma hyalinum*** (Lyell) Mitt., *Nat. hist. Azores*: 319, 1870 (Mitten 1870).

≡*Jungermannia hyalina* Lyell, *Brit. Jungermann.*: table 63, 1814 (Hooker 1814). Lectotype: Britain.

***GUATEMALA.** *QUETZALTENANGO: Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 2,442 m, 13 Jan 2006, *Quedensley 3951*, det. Dauphin Sep 2017 (MO, W-0089084! https://w.jacq.org/W0089084, **this publication**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent(?), Indo-China, Malesia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Solenostoma rubrum (Gottsche ex Underw.) R.M.Schust., *Hepat. Anthoc. N. Amer.* 2: 975, 1969 (Schuster 1969a).

≡*Jungermannia rubra* Gottsche ex Underw., *Bot. Gaz.* 13(5): 113, 1888 (Underwood 1888). Type: USA.

COSTA RICA. ALAJUELA: Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (Griffin et al. 1974 as *Solenostoma* cf. *rubrum*, but this is *Jungermannia sphaerocarpa* fide Davison 1993); Poás Volcano, *Griffin & Eakin 155*, det. Breil (FLAS, **Morales 1991** as *Jungermannia rubra*; **Dauphin 2005** as *Jungermannia rubra*); Poás Volcano, Aug 1978, *Griffin et al. 155* (FLAS-020507, **Morales and Griffin 1983** as *Jungermannia rubra*).

Also reported from Russian Far East, Subarctic America, Western Canada, Northwestern USA, Northeastern USA, Southwestern USA.

Solenostoma sphaerocarpum (Hook.) Steph., *Bull. Herb. Boissier*, sér. 2, 1: 499 (=*Spec. Hepat. [Stephani]* 2: 61), 1901 (Stephani 1901f).

≡*Jungermannia sphaerocarpa* Hook., *Brit. Jungermann.*: Tab. 74, 1815 (Hooker 1815). Lectotype: Ireland.

COSTA RICA. S. loc. (Váňa **1974a** as *Jungermannia sphaerocarpa*; Gradstein et al. 1977 as *Jungermannia sphaerocarpa*; Ceballos 1985 as *Jungermannia sphaerocarpa*; Gradstein and Váňa 1987 as *Jungermannia sphaerocarpa*; van Zanten and Gradstein 1987 as *Jungermannia sphaerocarpa*; Fulford and Sharp 1990 as *Jungermannia sphaerocarpa*; Gradstein 1999a as *Jungermannia sphaerocarpa*; Schuster 2002; Váňa and Watling 2004a as *Jungermannia sphaerocarpa*; Dauphin 2005 as *Jungermannia sphaerocarpa*; Gradstein and Holz 2005 as *Jungermannia sphaerocarpa*); Cordillera de Talamanca (Holz 2003 as *Jungermannia sphaerocarpa*; **Holz and Gradstein 2005b** as *Jungermannia sphaerocarpa*). SAN JOSÉ: Cordillera de Talamanca, 3,325 m, 1973, *Cleef*, det. Váňa (hb. Váňa, Váňa **1974b** as *Jungermannia sphaerocarpa*; **Morales 1991** as *Jungermannia sphaerocarpa*; **Kappelle 1996** as *Jungermannia sphaerocarpa*; **Dauphin 2005** as *Jungermannia sphaerocarpa*).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Malesia, Papuasia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Mexico, Northern South America, Western South America, Brazil.

***Stephaniella* J.B.Jack, *Hedwigia* 33(1): 11, 1894 (Jack 1894).**

Stephaniella paraphyllina J.B.Jack, *Hedwigia* 33(1): 11, 1894 (Jack 1894). Lectotype: Argentina.

GUATEMALA. HUEHUETENANGO: S. loc., *Pérez 1273* (USCG, Pérez 2009); Santiago Chimaltenango municipio, 30 km N of Huehuetenango, near town of Bacu, 15°35′56.9″N, 91°33′54.2″W, 11,139 ft (3,395 m), 5 Apr 2007, *Laeger et al. 3680*, det. Dauphin Jun 2017 (MO-6160445!, **this publication**).

?NICARAGUA. S. loc. (Arnell 1963). Note: We are not aware of any firsthand report from Nicaragua.

COSTA RICA. S. loc. (Gradstein et al. 1983; Schuster 1983a; Fulford and Sharp 1990; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Fuertes and Prada 2014); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). CARTAGO: Cordillera de Talamanca, Páramo Buenavista, 3,400 m, *Dauphin 2917* (NY, **Juárez-Martínez and Delgadillo 2017**); Oreamuno cantón, Irazú Volcán, Pacific side, *Svihla 41-464* (NY, **Juárez-Martínez and Delgadillo 2017**). GUANACASTE: S. loc., ~1,000 m (Gradstein et al. 2001b). SAN JOSÉ: Oreamuno cantón, Cima del Volcán Irazú, 3,400 m, *Morales & Arrocha 1849* (USJ, **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Páramo Buena Vista, *Griffin & Eakin 590*, det. J. Váňa (FLAS, **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Along road from summit of Volcán Barú to the middle of the Oak zone, *Allen 9104C* (MO, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**).

Also reported from Southern Africa, Mexico, Northern South America, Western South America, Brazil, Southern South America.

Stephaniella rostrata U.Schmitt., Österr. *Bot. Z.* 115(2): 124, 1968 (Schmitt and Winkler 1968). Type: Colombia.

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005). CARTAGO: Páramo Buenavista, *Dauphin 1688* (CR, **Dauphin 2005**). SAN JOSÉ: Oreamuno cantón, Cima del Volcán Irazú, 3,400 m, *Morales & Arrocha 1849* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Mexico, Northern South America, Western South America.

Stephaniella uncifolia S.Winkl., Österr. *Bot. Z.* 115(2): 124, 1968 (Schmitt and Winkler 1968). Type: Colombia.

COSTA RICA. GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, Cerro El Pedregal, 1,100 m, *Dauphin & Valdelomar 2431* (CR-1511022, USJ, **Dauphin et al. 1998**; **Dauphin 2005**); Liberia cantón, Rincón de La Vieja National park, Sector Pailas, camino a Catarata La Cangreja, 2015, *Dauphin 4592*, det. Juárez-Martinez 2016 (MEXU, **this publication**).

Also reported from Northern South America, Western South America, Brazil, Southern South America.

Stictolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

Stictolejeunea balfourii (Mitt.) E.W.Jones, *J. Bryol.* 9(1): 50, 1976 (Jones 1976) var. ***balfourii***.

≡*Lejeunea balfourii* Mitt., *Philos. Trans.* 168: 398, 1879 (Mitten 1879). Type: Rodriguez.

?HONDURAS. S. loc. (van Zanten and Gradstein 1988). ?ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 55741* (JE, **Gradstein 1985a**; Gradstein 1994, indicating "identification doubtful because of poor condition of the material").

COSTA RICA. PUNTARENAS: Osa cantón, Rincón, Boscosa, 150 m, *Gradstein & Dauphin 9337*, *9340*, *9344* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Shannon 11–12, *Salazar Allen 4325* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Shannon creek, *Gradstein & Salazar Allen 15078* (**Dauphin et al. 2022**). PANAMA: Panamá distrito, Parque Nacional Soberanía, Sendero "Camino de Cruces," *Gradstein 9761* (GOET, **Stotler et al. 1998**); Panamá distrito, Parque Nacional Soberanía, Sendero "Camino de Cruces," *Reiner-Drehwald 60030* (PMA, **Stotler et al. 1998**); Panamá distrito, Parque Nacional Soberanía, Sendero "Camino de Cruces," *Stotler & Crandall-Stotler 3508* (ABSH, **Stotler et al. 1998**).

***COCOS I.** Rio Genio, 5°32′57″N, 87°03′56″W, 22 Jan 1994, *Dauphin 943a* (hb. Dauphin!, det. S. R. Gradstein and G. Dauphin Oct 2020, **this publication**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Western Indian Ocean, Malesia, Papuasia, Australia, Southwestern Pacific, Northwestern Pacific, Northeastern Pacific, Mexico, Western South America, Brazil.

Stictolejeunea squamata (Willd.) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

≡*Jungermannia squamata* Willd., *Hist. Musc. Hepat. Prodr.*: 33, 1815 (Weber 1815). Type: West Indies.

=*Lejeunea squamata* var. *β kunzeana* Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 322, 1845 (Gottsche et al. 1845a). Lectotype: Chile.

≡*Stictolejeunea kunzeana* (Gottsche, Lindenb. et Nees) Schiffn., *Hepat. (Engl.-Prantl)*: 131, 1893 (Schiffner 1893a).

=*Lejeunea squamata* var. *macrior* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 83, 1884 (Spruce 1884), syn. fide Gradstein (1994). Type: Brazil.

≡*Stictolejeunea squamata* var. *macrior* (Spruce) Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 130, 1951 (Herzog 1951).

GUATEMALA. S. loc. (Evans 1907c as *Stictolejeunea kunzeana*; Fulford and Sharp 1990; Lücking 1995; Bapna and Kachroo 2000b; Bastos 2004); S. loc., *Levier* (BM, Pérez 2009). ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, **Barillas de Klee et al. 2008**); Cobán municipio, near Cubilguitz, 300–350 m, *Steyermark 44420* (MICH, **Freire 2006**; **Pérez 2009**); Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**). GUATEMALA: Guatemala City (BM, NY, **Gradstein 1985a**, **1994**; **Freire 2006**). HUEHUETENANGO: S. loc., *Pérez 1395* (USCG, Pérez 2009).

BELIZE. Near border with Guatemala, *Schipp 874* (NY, **Gradstein 1994**); S. loc. (**Fulford 1938**; Lücking 1995; Whittemore and Allen 1996; Bastos 2004). CAYO: S. loc., Dec 1993,

Allen 15113 (BRH, MO, **Whittemore and Allen 1996**). TOLEDO: S. loc., *Gentle 4371* (MO, **Whittemore and Allen 1996**); S. loc., *Hoist 4442* (MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15302* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15487* (BRH, MO, **Whittemore and Allen 1996**).

HONDURAS. S. loc. (Jovet-Ast 1957, 1959; Miller et al. 1983; Lücking 1995; Bastos 2004); S. loc., *Wilson 556a* (NY, **Gradstein 1994**). ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 53741 p.p.* (**Herzog 1951** as *Stictolejeunea squamata* var. *macrior*).

NICARAGUA. S. loc. (Lücking 1995; Bastos 2004). *ATLÁNTICO NORTE: Siuna municipio, along trail from Cerro El Inocente toward Cerro Saslaya, 13°46′N, 85°01′W, 8 Mar 1978, *Stevens 6730*, det. Dauphin May 2017 (MO-5238382!, **this publication**). ATLÁNTICO SUR: Bluefields municipio, base of Cerro San Isidro, *Proctor et al. 27218* (NY, **Gradstein 1994**).

COSTA RICA. S. loc. (Pagán 1939b, 1942b; Jovet-Ast 1957, 1959; Cole 1982, 1983, both also as *Stictolejeunea kunzeana*; Fulford 1987; Fulford and Sharp 1990; Bapna and Kachroo 2000b; Oliveira-e-Silva and Yano 2000; Bastos 2004); S. loc., *Dauphin 2134* (GOET, **Ye and Wei 2021**); S. loc., *Dauphin 2134* (GOET, **Wilson et al. 2007**; **Feldberg et al. 2014**; **Ye and Zhu 2018**; **Shu et al. 2022**); S. loc., *Maxon* (**Evans 1907c**); S. loc., *Standley 48616* (JE, **Zwickel 1932** as *Stictolejeunea kunzeana*). ALAJUELA: Río Cuatre cantón, Laguna Hule, *Dauphin & Gonzáles 2134* (GOET, CR, **Dauphin 2005**; **Larraín et al. 2015**). CARTAGO: Jimenéz cantón, Pejibaye, *Standley & Valerio 47166* (JE, **Gradstein 1985a**, **1994**); Rancho Naturalista, 900 m, *Eggers* (hb. Eggers, **Eggers 2001**). GUANACASTE: Tenorio, 500 m, *Eggers* (hb. Eggers, **Eggers 2001**); Tilarán cantón, El Silencio (Dauphin 2005); Tilarn cantón, El Silencio, 750 m, *Standley 44756a* (**Zwickel 1932** as *Stictolejeunea kunzeana*; **Herzog 1951** as *Stictolejeunea kunzeana*; **Morales 1991**; **Dauphin 2005**); Tilarán cantón, Los Ayotes (Dauphin 2005); Tilarán, *Standley & Valerio 44756a* (**Gradstein 1985a**; **Dauphin 2005**); Tilarán, *Standley & Valerio 45403* (**Gradstein 1985a**, **1994**; **Dauphin 2005**); Tilarán, El Silencio y Los Ayotes, 600–700 m, *Standley 45403* (**Zwickel 1932** as *Stictolejeunea kunzeana*; **Herzog 1951** as *Stictolejeunea kunzeana*; **Morales 1991**). HEREDIA: San Isidro cantón, Cerro Zurquí, *Standley & Valerio 50623* (JE, **Gradstein 1985a**, **1994**); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50623* (JE, **Zwickel 1932** as *Stictolejeunea kunzeana*; **Herzog 1951** as *Stictolejeunea kunzeana*; **Morales 1991**; **Dauphin 2005**); Sarapiquí cantón, Colonia Virgen del Socorro, *Dauphin & Gonzáles 2102* (CR, **Dauphin 2005**); Sarapiquí cantón, La Selva, 100 m, *Eggers* (hb. Eggers, **Eggers 2001**). LIMÓN: Braulio Carrillo National Park, 400–500 m (Eggers 2001); Guácimo cantón, Parismina, ~5 m (Eggers 2001); Guácimo cantón, Parismina, *Valerio 6* (**Dauphin 2005**; **Morales 1991**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-39*, *91-41*, *92-53*, *92-54*, *92-55*, *92-336*, *92-521* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero, *Steere CR-85* (NY, **Gradstein 1994**); Siquirres cantón, Cairo, Finca Hamburgo, on the Rio Reventazón below Cairo, 55 m, *Standley 48716* (**Herzog 1951** as *Stictolejeunea kunzeana*; **Morales 1991**); Siquirres cantón, Rio Reventazón below Cairo, Nov 1926, *Standley & Valerio 48716* (JE, **Gradstein 1985a**). PUNTARENAS: Coto Brus cantón, Fila Cruces, Cerro Paraguas, *Dauphin & Chacón 1806* (CR, **Dauphin 2005**); Golfito cantón, Esquinas, <100 m, *Eggers* (hb. Eggers, **Eggers 2001**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**); Golfo Dulce, *Elmore 39-759* (AHFH, MICH, hb. Fulford, **Steere 1946**); Golfo Dulce, *Taylor 39-760*, *39-764* (AHFH, MICH, hb. Fulford, **Steere 1946** as *Stictolejeunea kunzeana*; **Morales 1991**; **Dauphin 2005**); Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, Oct 1967, *James, W.* (R, US, **Reed and Robinson 1971**; **Dauphin 2005**); Monteverde, 16 Mar 1969, *James, W. 1969-66* (US, **Reed and Robinson 1971**; **Dauphin 2005**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); Osa cantón, Santo Domingo de Golfo Dulce, *Taylor 760* (hb. Fulford, **Crandall 1969**).

PANAMA. S. loc. (Jovet-Ast 1957, 1959; Fulford and Sharp 1990; Lücking 1995; Stotler et al. 1998; Bastos 2004); Canal Zone (Schäfer-Verwimp 2014). CHIRIQUÍ: Boquete distrito, forest near David, Jun 1906, *Hélion* (L, S, U, **Gradstein 1985a**); Boquete, 1906, *Hélion* (FH, **Thiers 1985**); David, *Hélion* (L, S, U, **Gradstein 1994**; **Stotler et al. 1998**); Gualaca distrito, Fortuna Forest Reserve, Cerro Hornito, 1,670–2,300 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Continental Divide, Trail Palo Seco, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 2405* (PMA, **Stotler et al. 1998**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,650 m, *Schäfer-Verwimp & Verwimp 34447*, *34495* (JE, **Schäfer-Verwimp 2014**). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 710 m, 1 Aug 2012, *Dauphin & Salazar Allen 4524 p.p.* (PMA, **Dauphin et al. 2015**); La Pintada distrito, El Copé, Parque Nacional General Division Omar Torríjos Herrera, sendero La Rana Dorada, Rio Guabal, 8°40′N, 80°35′W, 700 m, 10 Jan 2014, *Sierra & López 696*, *733*, *747.3 p.p.*, *752 p.p.*, *764 p.p.*, *804*, *820*, *823* (PMA, **Sierra et al. 2019a**). *COLÓN: Colón distrito, Quebrada Bonita, 20 Dec 1934, *Dodge & Allen*

8812, det. Dauphin May 2017 (MO-5131818!, **this publication**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); base of Cerro Pirre, *Salazar Allen & Gradstein 9219* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Pinogana distrito, ~20 km SSW of Boca de Cupé, ~200 m, *Allen 8685* (MO, **Stotler et al. 1998**). EMBERÁ-WOUNAAN COMARCA: Cémaco distrito, Marragantí, *Williams 1082* (NY, **Gradstein 1994**; **Stotler et al. 1998**). PANAMA WEST: S. loc. (He et al. 2016); Capira distrito, Campana National Park, 800 m, *Salazar Allen et al. 6563*, *6571*, *6624* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003); La Chorrera distrito, Barro Colorado Island, 1 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Salazar Allen et al. 4384*, *4391*, *4409*, *etc.* (PMA, **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Shattuck 4CH p.p.* (F, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado Island, *Zatek & Shattuck* (**Haynes 1933**); La Chorrera distrito, Barro Colorado Island, various trails, *Salazar Allen et al. 4713* (PMA, **Stotler et al. 1998**); La Chorrera distrito, Barro Colorado, Lathrop, 2003, *Dauphin 3090* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Shannon, 2003, *Dauphin 3068*, *3071* (CR, PMA, **Dauphin et al. 2022**). *PANAMA: S. loc. (Bapna and Kachroo 2000b; Schäfer-Verwimp 2014); Panamá distrito, Camino de Cruces (Salazar Allen and Chung 1997a); Panamá distrito, Quebrada Culebra, 28 Dec 1934, *Steyermark 17217*, det. Dauphin May 2017 (MO-5139404!, **this publication**); Panamá distrito, River Chagres between junction with River Pequeni and Indio, 5 Dec 1934, *Steyermark & Allen 16809*, det. Dauphin May 2017 (MO-5139414!, **this publication**). VERAGUAS: Isla Canales de Tierra, Sendero de la via del tren hacia el laboratorio, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 20242* (PMA, **Salazar Allen and Chung 2003, 2006**); Isla Canales de Tierra, Sendero Punta, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 20134* (PMA, **Salazar Allen and Chung 2003, 2006**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), a lo largo de Río Escondido hasta la parcela de M. A. Martinez, 7°35′59.0′N, 81°47′13.6″W, 1995–1996, *Aranda 2371*, *2372*, *2376*, *etc.* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Boca Grande, 7°22′13.6′N, 81°39′26.9″W, 1995–1996, *Galdames 3727* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), camino que va hacia la cabecera del Río Negro, a la izquierda del campamenio San Juan Viejo, 7°25′27.9′N, 81°44′10.4″W, 1995–1996, *Aranda 2454* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Cerro La Equis, sendero Dayana, 7°36′01.9′N, 81°44′42.1″W, 1995–1996, *Aranda 2166* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Ensenada Santa Cruz, río arriba por el margen derecho, 7°36′29.0′N, 81°45′48.0″W, 1995–1996, *Aranda 2479* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Filo a la izquierda de río, 7°37′02.5′N, 81°44′23.7″W, 1995–1996, *Aranda 2137*, *2157* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Margen izquierdo del Río Santa Cruz, rumbo sur, 7°36′29.0′N, 81°45′48.0″W, 1995–1996, *Aranda 2220* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Playa Hermosa, subiendo a la falla y tomando hacia playa Santa Clara, 7°30′03.0′N, 81°52′26.9″W, 1995–1996, *Aranda 2512* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Río Escondido después de la parcela de M. A. Martinez hasta la cascada del mismo nombre, 7°35′59.0′N, 81°47′13.6″W, 1995–1996, *Aranda 2428* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Sendero Interpretativo, 7°37′02.5′N, 81°44′23.7″W, 1995–1996, *Aranda 2128*, *2132* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Parque Nacional Coiba (Salazar Allen and Chung 2003); Santa Fe distrito, trail to Cerro del Piedra, 8°30′N, 81°06′W, 850–900 m, 2 Apr 2006, *Schäfer-Verwimp & Verwimp 30815*, *30830* (JE, **Schäfer-Verwimp 2014**); Soná distrito, Región de Bahía Honda, Quebrada que desemboca en Playa Los García, Jan 2002, *Salazar Allen et al. 20430* (PMA, **Salazar Allen and Chung 2003, 2006**).

COCOS I. S. loc. (Fosberg and Klawe 1966; Miller et al. 1983; Dauphin 1995; Lücking 1995; Bapna and Kachroo 2000b; Salazar Allen and Chung 2003); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Catarata Río Genio, 5°32′57″N, 87°03′56″W, 140 m, 23 Jan 1990, *Dauphin 1001*, det. G. Dauphin Oct 2020 (USJ-47193!, CR-4468293!, W!, **this publication**); Catarata Río Genio, 5°32′57″N, 87°03′56″W, 140 m, 23 Jan 1990, *Dauphin 1021*, det. G. Dauphin Oct 2020 (USJ-47194!, CR-4468151!, **this publication**); Catarata Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 15 Feb 1994, *Dauphin 1001*, *1021* (USJ, **Dauphin 1995**, **1999**, **2005**); Chatham Bay, Mar 1964, *Weber 549* (COLO, U, **Gradstein 1985a**, **1994**; **Dauphin 2005**); Chatham Bay, 28 Jun 1932, *Howell 223* (CAS, **Clark 1953a**); Valle Wafer, 5°32′57″N, 87°03′56″W, 0–2 m, 31 May 1990, *Dauphin*, det. G. Dauphin Oct 2020 (USJ-47195!, CR-4468152!, W!, **this publication**); Wafer Bay, 0–20 m, 15 Feb 1964, *Weber B-14312*, det. Grolle (**Weber 1993**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Symbiezidium Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 402, 1877 (Trevisan 1877).

Symbiezidium barbiflorum (Lindenb. et Gottsche) A.Evans, *Bull. Torrey Bot. Club* 34(11): 540, 1907 (Evans 1907b).

≡*Lejeunea barbiflora* Lindenb. et Gottsche, *Linnaea* 24(6): 630, 1851 (Lindenberg and Gottsche 1851). Type: Surinam.

=*Lejeunea pogonoptera* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 128, 1884 (Spruce 1884), syn. fide Gradstein and van Beek (1985). Lectotype: Brazil.

≡*Platylejeunea pogonoptera* (Spruce) A.Evans., *Proc. Amer. Acad. Arts* 38(4): 261, 1902 (Evans 1902a).

≡*Symbiezidium pogonopterum* (Spruce) Steph., *Sp. Hepat. (Stephani)* 5: 103, 1912 (Stephani 1912a).

=*Symbiezidium setosum* Steph., *Sp. Hepat. (Stephani)* 5: 104, 1912 (Stephani 1912a), syn. fide Gradstein and van Beek (1985). Type: Mexico.

GUATEMALA. S. loc. (Stephani 1912a as *Symbiezidium setosum*; Fulford and Sharp 1990 as *Symbiezidium setosum*). ALTA VERAPAZ: S. loc., 350 m, *Türckheim* (G ex hb. Levier 5822, NY, **Fulford 1942a** as *Symbiezidium setosum*); Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Symbiezidium* aff. *barbiflorum*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

BELIZE. S. loc. (Lücking 1995; Bastos 2004). TOLEDO: S. loc. (Whittemore and Allen 1996); Punta Gorda, Nov 1932 (CINC, hb. Fulford, **Gradstein and van Beek 1985**; **Gradstein 1994**).

HONDURAS. S. loc. (Jovet-Ast 1957; Lücking 1995; Bastos 2004). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 55337* (US, **Gradstein 1994**); Tela municipio, La Fragua, 20 m, *Standley 55714* (**Herzog 1951**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55342* (JE, **Herzog 1951** as *Symbiezidium setosum*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55537* (**Herzog 1951**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55553* (S, **Gradstein and van Beek 1985**; **Gradstein 1994**); Tela municipio, Lancetilla Valley, *Standley 55623* (US, **Gradstein 1994**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55848* (**Herzog 1951**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931** also as *Symbiezidium setosum*).

NICARAGUA. S. loc. (Lücking 1995; Bastos 2004). CHONTALES: Villa Sandino municipio, near La Gateada, on road to Nueva Guinea, *Stevens 2862c* (MO, U, **Gradstein 1994**).

COSTA RICA. S. loc. (Jovet-Ast 1957; Bastos 2004); S. loc., *Gradstein & Dauphin 9363* (GOET, **Wilson et al. 2007**; **Feldberg et al. 2014**; **Ye and Wei 2021**). ALAJUELA: San Ramón cantón, Los Ángeles (Dauphin 2005); San Ramón cantón, Los Ángeles, *Tonduz 13613*, det. NY (**Gradstein 1994**). GUANACASTE: Liberia cantón, Rincón de la Vieja National Park, Sector Santa María, *Dauphin 2345* (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-459* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b**); Osa cantón, San Domingo, 1896, *Tonduz 11558* (G, NY, YU, Y, **Fulford 1942a**; **Gradstein and van Beek 1985**; **Morales 1991**; **Gradstein 1994**; **Dauphin 2005**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (Jovet-Ast 1957; Lücking 1995; Stotler et al. 1998; Bastos 2004). BOCAS DEL TORO: Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; **Stotler et al. 1998**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, around INRENARE field station, ~100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, between Pirre 1 and Pirre 2, *Salazar Allen & Gradstein 9222 p.p.* (PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Chung & Aranda 237* (NY, **Gradstein 1994**); La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 1595* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, *Salazar Allen et al. 4298*, *4375*, *4383*, *etc.* (PMA, U, **Gradstein 1994**; **Stotler et al. 1998**; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Armour, 2003, *Dauphin 3089* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Snyder-Molino, 2003, *Dauphin 3057* (CR, PMA, **Dauphin et al. 2022**). VERAGUAS: Montijo distrito, Isla de Coiba (Parque Nacional Coiba), Boca Grande, 7°22′13.6′N, 81°39′26.9″W, 1995–1996, *Galdames 3727* (MA, PMA, **Salazar Allen and Chung 1997a**); Montijo distrito, Isla de Coiba, near María River, across bay from Colonia Penal, 22 Oct 1979, *Antonio 2309*, det. Dauphin May 2017 (MO-2849694!, **this publication**); Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34319/A* (JE, **Schäfer-Verwimp 2014**).

COCOS I. S. loc. (Clark 1953a as *Symbiezidium pogonopterum*; Fosberg and Klawe 1966 as *Platylejeunea pogonoptera* and *Symbiezidium pogonopterum*; Dauphin 1995); S. loc., *Gómez-Pignataro 17983*, *18022* (MO, U, **Gradstein 1994**); S. loc., 1964, *Itow 7 p.p.* (COLO, **Gradstein and van Beek 1985**); S. loc., 1964, *Weber 550c* (COLO, **Gradstein and van Beek 1985**; **Gradstein 1994**); S. loc., 1964, *Weber 561* (COLO, **Gradstein and van Beek 1985**; **Gradstein 1994**); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Chatham Bay, 28 Jun 1932, *Howell 225* (CAS, **Clark 1953a** as *Symbiezidium pogonopterum*); Río Genio, 5°32′57″N, 87°03′56″W, 130 m, 23 Jan 1990, *Dauphin 1037*, det. G. Dauphin Jan 2021 (USJ-47192!, CR-4468166!, W!, **this publication**); Valle Wafer, 5°32′57″N, 87°03′56″W, 5 m, 15 Feb 1994, *Dauphin 918* (USJ, CR, **Dauphin 1995**, **1999**, **2005**).

Also reported from Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Symbiezidium dentatum Herzog, *Feddes Repert. Spec. Nov. Regni Veg.* 57(1/2): 175, 1955 (Herzog 1955a). Type: Colombia.

COSTA RICA. S. loc. (Gradstein 2021). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-178* (USJ, **Gradstein et al. 1994**; **Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-146*, *92-178*, *94-25* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m,

1995, *Lücking* (**Lücking 1997**). PUNTARENAS: Golfito cantón, Corcovado National Park, Esquinas, *Soto 4170 p.p.* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Arena, 920–1,100 m (**Salazar Allen et al. 2021**).

COCOS I. Bahía Yglesias, Feb 1976, *Gómez-Pignataro 6579*, det. Dauphin May 2017 (MO-5228158!, **this publication**); Boca Río Genio, 5°32′57″N, 87°03′56″W, 0 m, 15 Feb 1994, *Dauphin 952* (USJ, **Dauphin 1995, 1999, 2005**).

Also reported from Mexico, Northern South America, Western South America.

Symbiezidium transversale var. ***hookerianum*** (Gottsche, Lindenb. et Nees) Gradst. et J.Beek, *Beih. Nova Hedwigia* 80: 237, 1985 (Gradstein and van Beek 1985).

≡*Lejeunea transversalis β hookeriana* Gottsche, Lindenb. et Nees, *Syn. Hepat.* 3: 311, 1845 (Gottsche et al. 1845a). Lectotype: Guadeloupe.

=*Lejeunea vincentina* Gottsche, *Syn. Hepat.* 3: 313, 1845 (Gottsche et al. 1845a), syn. fide Gradstein and Beek (1985). Type: St. Vincent.

≡*Symbiezidium vincentinum* (Gottsche) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 403, 1877 (Trevisan 1877). Note: Although a formal synonym of var. *hookerianum*, material from Cocos I. reported as *Symbiezidium vincentinum* has been reidentified as belonging to var. *transversale* (cf. Gradstein 1994).

=*Lejeunea taeniopsis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 126, 1884 (Spruce 1884), syn. fide Gradstein (1994). Lectotype: Brazil.

≡*Symbiezidium taeniopsis* (Spruce) Fulford, *Lloydia* 5(4): 302, 1942 (Fulford 1942a). Note: Although a formal synonym of var. *hookerianum*, material from Panama reported as *Symbiezidium taeniopsis* has been reidentified as belonging to var. *transversale* (Gradstein 1994).

=*Symbiezidium laceratum* A.Evans, *Bull. Torrey Bot. Club* 35(8): 306, 1908 (Evans 1908a), syn. fide Gradstein (1994). Type: Haiti.

BELIZE. S. loc. (**Fulford 1938** as *Symbiezidium laceratum*; Jovet-Ast 1959 as *Symbiezidium laceratum*; Lücking 1995; Whittemore and Allen 1996; Bastos 2004). TOLEDO: S. loc. (Whittemore and Allen 1996); Punta Gorda, Nov 1932 (CINC, hb. Fulford, **Gradstein and van Beek 1985**; **Gradstein 1994**).

?NICARAGUA. S. loc. (Bastos 2004). Note: We are not aware of any firsthand report from Nicaragua.

COSTA RICA. S. loc. (Bastos 2004). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**).

PANAMA. S. loc. (Jovet-Ast 1959 as *Symbiezidium taeniopsis*; Bastos 2004); S. loc., *Mannee & Gorgone* (YU, **Fulford 1942a** as *Symbiezidium taeniopsis*). BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Magaña-Marcial 247*, det. Magaña-Marcial Aug 2017 (PMA, **this publication**); Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**). PANAMA: Panamá distrito, Quebrada Culebra, *Dodge & Allen 17076* (MO, **Stotler et al. 1998**).

COCOS I. S. loc. (Fosberg and Klawe 1966 as *Symbiezidium vincentinum*, Dauphin 1995); S. loc., 1964, *Itow 7 p.p.* (COLO, **Gradstein and van Beek 1985**); S. loc., 0–100 m, Apr 1964, *Itow 7* (COLO, U-540267, B, JE, **Gradstein 1994**; **Dauphin 2005**); S. loc., Jun 2016, *Sanchez 2689* (CR!, **this publication**); Valle Wafer, Estación Servicio Parques Nacionales, 5 m, 14 Feb 1994, *Dauphin 919* (USJ, **Dauphin 1995**); Wafer Bay, 28 Jun 1932, *Howell 222* (CAS, **Clark 1953a** as *Symbiezidium vincentinum*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Symbiezidium transversale (Sw.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 403, 1877 (Trevisan 1877) var. ***transversale***.

≡*Jungermannia transversalis* Sw., *Prodr. (Swartz)*: 144, 1788 (Swartz 1788). Type: Jamaica.

=*Jungermannia subrotunda* Hook., *Syn. Pl. (Kunth)* 1: 41, 1822 (Kunth 1822), syn. fide Gradstein (1994). Type: Colombia.

≡*Symbiezidium subrotundum* (Hook.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 403, 1877 (Trevisan 1877).

=*Symbiezidium cordistipulum* Steph., *Sp. Hepat. (Stephani)* 5: 101, 1912 (Stephani 1912a), syn. fide Gradstein and van Beek (1985). Lectotype (Gradstein and van Beek 1985: 234 as "holotype") or possibly holotype: Costa Rica, Puntarenas Boruca, 1891, *Tonduz 15560* (G-00069939 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131321&lang=en).

=*Symbiezidium grandifolium* Steph., *Sp. Hepat. (Stephani)* 5: 101, 1912 (Stephani 1912a), syn. fide Gradstein and van Beek (1985). Lectotype (Gradstein and van Beek 1985: 237): Costa Rica, *Tonduz 15671*, Steph. hb. No. 18834 (=G-00069944 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131316&lang=en).

GUATEMALA. S. loc. (Stephani 1912a as *Symbiezidium subrotundum*; Arnell 1959 as *Symbiezidium subrotundum*); S. loc., 1841, *Friedrichstahl*, det. Dauphin Sep 2017 (W-2017-07326!, **this publication**). ALTA VERAPAZ: S. loc., 350 m, *Türckheim* (G ex hb. Levier 5822, NY, **Fulford 1942a** as *Symbiezidium subrotundum*). HUEHUETENANGO: S. loc., *Pérez 1416* (USCG, Pérez 2009). QUICHÉ: S. loc., *Pérez 2229* (USCG, Pérez 2009).

BELIZE. S. loc. (**Fulford 1938**; Lücking 1995; Whittemore and Allen 1996). TOLEDO: S. loc. (Whittemore and Allen 1996); Punta Gorda (hb. Fulford, **Crandall 1969**); Punta Gorda, Nov 1932 (CINC, hb. Fulford, **Gradstein and van Beek 1985**; **Gradstein 1994**).

HONDURAS. S. loc. (Miller et al. 1983). ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley 54801* (C, **Fulford 1942a** as *Symbiezidium subrotundum*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55553* (S, **Herzog 1951**); Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931**).

NICARAGUA. S. loc. (Lücking 1995; Ilkiu-Borges 2000). ATLÁNTICO SUR: Bluefields municipio, Cerro San lsidro, *Proctor 27220* (**Gradstein 1994**).

COSTA RICA. S. loc. (Stephani 1912a as *Symbiezidium subrotundum*; Arnell 1959 as *Symbiezidium subrotundum*; Ilkiu-Borges 2000). CARTAGO: Jiménez cantón, Flumen Naranjo, *Tonduz* (NY, **Gradstein 1994**); Jiménez cantón, Rio Naranjo,

1893, *Tonduz 15671* (G, NY, **TYPE** of *Symbiezidium grandifolium*, **Stephani 1912a** as *Symbiezidium grandifolium*; **Fulford 1942a**; **Gradstein and van Beek 1985**; **Morales 1991**; **Dauphin 2005**); Jiménez cantón, Rio Naranjo, Mar 1893, *Tonduz 15571* (M, YU, NY, **Geissler and Bischler 1990** as *Symbiezidium grandifolium*). GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3341* (CR, **Dauphin 2005**; **Dauphin and Grayum 2005**); Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 2591* (CR, **Dauphin 2005**). LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 92-186*, *92-535*, *94-29* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**); Pococí cantón, Tortuguero National Park, Caño Mora, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 11253*, det. Dauphin May 2017 (MO-6690000!, **this publication**); Pococí cantón, Tortuguero, *Steere CR-150*, *CR-173*, *CR-32* (NY, **Gradstein 1994**; **Dauphin 2005**). PUNTARENAS: Buenos Aires cantón, Boruca, 1891, *Tonduz 15560* (G-00069939 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=131321&lang=en, **TYPE** of *Symbiezidium cordistipulum*, **Stephani 1912a** as *Symbiezidium cordistipulum*; **Geissler and Bischler 1990** as *Symbiezidium cordistipulum*; **Dauphin 2005**); Golfito cantón, Piedras Blancas National Park, Esquinas forest (8°41.316′N, 83°12.305′W), 3 Feb 2005 (**Sonnleitner et al. 2009**).

PANAMA. Canal Zone (Schäfer-Verwimp 2014); S. loc. (**Stephani 1912a** as *Symbiezidium subrotundum*; Arnell 1959 as *Symbiezidium subrotundum*; Fulford 1987 as *Symbiezidium subrotundum*; Lücking 1995; Stotler et al. 1998; Ilkiu-Borges 2000); S. loc., *Dodge & Allen 8847a* (MO, **Fulford 1942a** as *Symbiezidium subrotundum*; **Stotler et al. 1998**); S. loc., *Dodge & Allen 8879* (MO, **Fulford 1942a** as *Symbiezidium subrotundum*; **Stotler et al. 1998**); S. loc., *Mannee & Gorgone* (YU, **Gradstein and van Beek 1985**; **Gradstein 1994**; **Stotler et al. 1998**). BOCAS DEL TORO: Dolphin Bay (9°13′14.7″N, 82°13′02.9″W), Aug 2017 (**Salazar Allen et al. 2022**); Salt Creek (9°17′39.7″N, 82°06′11.2″W) on Isla Bastimento, Aug 2017 (**Salazar Allen et al. 2022**); Tranquilo Bay Eco Adventure Lodge (9°15′23.1″N, 82°08′41.4″W) in Isla Bastimento (**Salazar Allen et al. 2022**). COLÓN: S. loc. (Schäfer-Verwimp 2014); S. loc., *Dodge et al. 16959* (MO, **Fulford 1942a** as *Symbiezidium subrotundum*; **Stotler et al. 1998**). DARIÉN: S. loc. (Schäfer-Verwimp 2014); Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 800 m, *Salazar Allen & Gradstein 9264* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, along trail to Rancho Mojado, 400–500 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA WEST: La Chorrera distrito, Barro Colorado Island (Salazar Allen and Chung 2003); La Chorrera distrito, Barro Colorado Island, Camino Snider-Molino, *Chung & Aranda B 237 (R7C3)* (PMA, **Stotler et al. 1998**). PANAMA: Panamá distrito, Canal Zone Forest Preserve, Aug 1950, *Chickering* (MICH, **Stotler et al. 1998**); Panamá distrito, Parque Municipal Summit (Canal Zone Experimental Gardens), 24 Jul 1950, *Chickering* (MICH, **Crum and Arzeni 1953**). VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34291* (JE, **Schäfer-Verwimp 2014**); Soná distrito, Región de Bahía Honda, Sendero de Manglarito hacia Playa Limón, Jan 2002, *Salazar Allen et al. 20312* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero hacia El Edén, Jan 2002, *Salazar Allen et al. 20521* (PMA, **Salazar Allen and Chung 2003, 2006**).

COCOS I. S. loc. (Miller et al. 1983; Dauphin 1995; Salazar Allen and Chung 2003); S. loc., 1966, *Fosberg & Klawe* (Morales 1991); Boca Río Genio, 5°32′57″N, 87°03′56″W, 0–5 m, *Dauphin 951 p.p.*, det. G. Dauphin Feb 2021 (USJ-47191!, CR!, W!, **this publication**); Cerro Pelón, 5°32′57″N, 87°03′56″W, 480 m, 21 Jan 1990, *Dauphin 990*, det. G. Dauphin Oct 2020 (USJ-47187!, CR-4468169!, **this publication**); Chatham Bay, Mar 1964, *Weber 549* (COLO, U, **Gradstein and van Beek 1985**; **Gradstein 1994**; **Dauphin 2005**); Chatham Bay, 28 Jun 1932, *Howell 235* (CAS, **Clark 1953a**); Río Genio, 5°32′57″N, 87°03′56″W, 0–50 m, Apr 1992, *Lücking 286* (hb. Bernecker, **Bernecker-Lücking 2000**); Río Genio, 5°32′57″N, 87°03′56″W, Apr 1992, *Lücking 92-286* (hb. Lücking, **Lücking 1995**); Valle Wafer, 5°32′57″N, 87°03′56″W, 0–5 m, 19 Jan 1990, *Dauphin 919*, det. G. Dauphin Apr 2021 (CR-4468305!, **this publication**); Valle Wafer, Estación Servicio Parques Nacionales, 5 m, 14 Feb 1994, *Dauphin 919* (USJ, **Dauphin 1999**); Wafer Bay, 28 Jun 1932, *Howell 222*, *231 p.p.* (CAS, **Clark 1953a**); Wafer Bay, 28 Jun 1932, *Walton Clark 230* (CAS, **Clark 1953a**); Wafer Bay, 0–20 m, 15 Feb 1964, *Weber B-14335* (**Weber 1993**); Yglesias D, 350–500 m, Apr 1992, *Lücking 289*, *290*, *589*, *590* (USJ, ULM, **Bernecker-Lücking 2000**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Symphyogyna Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 66, 1836 (Nees and Montagne 1836).

Symphyogyna apiculispina Steph., *Biblioth. Bot.* 87(2): 180, 1916 (Stephani 1916b). Type: Bolivia.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 192* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Western South America.

Symphyogyna aspera Steph. ex F.A.McCormick, *Bot. Gaz.* 58(5): 403, 1914 (McCormick 1916). Type: Mexico.

GUATEMALA. ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det.

M. Pérez (**Pérez and López-Medina 2012**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, 2,300–2,500 m, *Pérez 391* (USCG, **Pérez 2009**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 137*, *141*, *etc.* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as '*Symphiogina*'). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). QUICHÉ: S. loc., *Pérez 2330* (USCG, **Pérez 2009**).

BELIZE. CAYO: S. loc., Dec 1993, *Allen 15132* (BRH, MO, **Whittemore and Allen 1996**).

EL SALVADOR. S. loc. (Hell 1969; Dauphin et al. 1998; Oliveira-e-Silva and Yano 2000; Osakada and Lisbôa 2004). AHUACHAPÁN: Near Ahuachapán, 800–1,000 m, 7–27 Jan 1922, *Standley 20281* (US, Y, NY, **Evans 1925**; **Hässel 1961**).

COSTA RICA. S. loc. (Schäfer-Verwimp and Pócs 2009). *CARTAGO: Paraíso cantón, Tapanti National Park, 7 Dec 1982, *Gómez-Pignataro 19352*, det. Dauphin May 2017 (MO-6236067!, **this publication**). GUANACASTE: Bagaces cantón, Rincón de La Vieja National Park, Sector Santa María, "Los Naranjos" near Provision rivulet, 10°46′20″N, 85°17′15″W, 840 m, *Dauphin 2330*, det. J. Uribe (CR, COL, **Dauphin et al. 1998**; **Dauphin 2005**).

PANAMA. S. loc., *Villarreal 668* (PMA, **Forrest et al. 2006**). CHIRIQUÍ: Boquete distrito, Bajo Mono, along Rio Caldera, 8°50.5′N, 82°28.9′W, 1,670–1,745 m, 5 Apr 2006, *Schäfer-Verwimp & Verwimp 30947/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Fortuna Forest Reserve, foothills of Cerro Pinola, 1,280–2,000 m (**Salazar Allen et al. 2021**). VERAGUAS: Santa Fe distrito, Piedra Alto, 8°30–31′N, 81°07–08′W, 800–850 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34311*(JE, **Schäfer-Verwimp 2014**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Symphyogyna brasiliensis Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 67, 1836 (Nees and Montagne 1836) var. ***brasiliensis***. Type: Brazil.

GUATEMALA. ALTA VERAPAZ: Tucurú, *Pérez 275* (USCG, Pérez 2006, **2009**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 193*, *379* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Cole 1984; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 3490* (U, **Kappelle 1996**); Pan-American Highway, *Haupt* (**Morales 1991**). ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, Feb 1926, *Standley & Torres 47978* (**Evans 1927**; Haupt 1942; **Morales 1991**; **Dauphin 2005**); Poás National Park, *Canessa 481* (**Dauphin 2005**); Poás Volcano, *Morales & Canessa 432* (G, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 6 Aug 0972, *Morales 481* (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**); Poás Volcano, 10 Jun 1968, *Morales & Canessa 432* (**Morales and Griffin 1983**). CARTAGO: Oreamuno cantón, Irazú Volcán, *Haupt* (**Morales 1991**; **Dauphin 2005**). HEREDIA: Heredia cantón, Vara Blanca, *Haupt* (**Morales 1991**; **Dauphin 2005**); Heredia cantón, Vara Blanca, 5,300 ft (1,615 m), 25 Aug 1940, *Haupt* (**Haupt 1942**); San Isidro cantón, Yerba Buena, ~2,000 m, Feb 1926, *Standley & Valerio 49680* (**Evans 1927**; **Morales 1991**; **Dauphin 2005**); San Isidro cantón, Yerba Buena, Feb 1926, *Standley* (Haupt 1942). PUNTARENAS: S. loc. (**Merwin et al. 2001**). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Montañas de Tablazo, *Haupt* (**Morales 1991**; **Dauphin 2005**); Moravia cantón, La Hondura, 1,300–1,700 m, 1924, *Standley 36295* (US, Y, **Evans 1927**; Haupt 1942; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, Mar 1924, *Standley 38569* (US, Y, **Evans 1927**; Haupt 1942; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 6,000 ft (1,829 m), 31 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**).

PANAMA. CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NW of camping site, 1,000–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, 1,000–1,270 m, *Salazar Allen et al. 605*, *692* (PMA, **Stotler et al. 1998**); Gualaca distrito, Reserva Forestal Fortuna, Aug 2017, *Dauphin et al. 4646* (PMA, **this publication**); Gualaca distrito, Reserva Forestal Fortuna, Aug 2017, *Dauphin et al. 4647* (PMA, **this publication**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, 1,200–1,300 m, *Salazar Allen & Gradstein 9295* (PMA, **Stotler et al. 1998**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**). PANAMA: Panamá distrito, Cerro Jefe (Stotler et al. 1998); Panamá distrito, Cerro Jefe, *Hammel & de Nevers 13579* (MO, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Salazar Allen 5217* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Spörle 0.8* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Panamá distrito, Taboga, *Seemann* (NY, **Evans 1927**; **Stotler et al. 1998**).

Also reported from West-Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Australia, New Zealand, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Symphyogyna brongniartii Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 265, 1843 (Montagne 1843). Type: Guadeloupe.

GUATEMALA. S. loc. (Pagán 1939a; Haupt 1942). ALTA VERAPAZ: Senahú municipio, Finca Sepacuité, 1902, *Cook & Griggs 409* (NY, Y, **Evans 1925**); Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 108* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 87, 96, 314, 385, 442, 515* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). HUEHUETENANGO: Barillas municipio, San José Maxbal, Laguna Maxbal, 15°56′23″N, 91°18′19″W, *Pérez 1402* (USCG, Pérez 2009). *QUETZALTENANGO: Zunil municipio, Aguas Amargas, NW slopes of Pico Zunil, 14°45′21.6″N, 91°29′21.6″W, 9 Sep 2005, *Quedensley 2306*, det. Dauphin Sep 2017 (MO, W-0089085!, **this publication**). QUICHÉ: S. loc., *Pérez 2362* (USCG, Pérez 2009).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 3869* (U, **Kappelle 1996**); S. loc. (Pagán 1939a; Cole 1984; Dauphin 2005; Schäfer-Verwimp and Van Melick 2016); S. loc., *Pittier* (G, **Stephani 1900b**). ALAJUELA: Buena Vista, road to San Carlos Valley, 1903, *Cook & Doyle 144* (NY, Y, **Evans 1925**; **Haupt 1942**); Poás Volcano, Aug 1977, *Griffin et al. 103* (USJ, FLAS-020503, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); San Carlos cantón, Camino al valle de San Carlos, *Cook & Doyle* (**Morales 1991**; **Dauphin 2005**). CARTAGO: Jiménez cantón, Tucurrique, 1920, *Rowlee & Stark 811* (Y, **Evans 1925**; **Haupt 1942**; **Morales 1991**; **Dauphin 2005**); La Union cantón, Cerro de La Carpintera, *Standley 35577* (US, Y, Haupt 1942; **Morales 1991**; **Dauphin 2005**); Paraíso cantón, Tapanti National Park, 7 Dec 1980, *Gómez-Pignataro 19340*, det. Dauphin May 2017 (MO-6236074!, **this publication**). HEREDIA: Heredia cantón, Vara Blanca, 5,300 ft (1,615 m), 2 Aug 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**); La Uvita, *Morales 238* (USJ, FLAS, **Morales 1991**; **Dauphin 2005**). LIMÓN: Pococí cantón, Río Toro Amarillo, E of Guápiles, *Woodruff*, det. Grolle (FLAS, **Morales 1991**; **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde (Morales 1991); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde, 4,500 ft (1,372 m), 9 Mar 1969, *James, W. 27* (R, **Reed and Robinson 1971**; **Dauphin 2005**). SAN JOSÉ: Aserrí cantón, Tablazo Mountains, SW of Cartago, 5,500 ft (1,676 m), 9 Aug 1940, *Haupt* (**Haupt 1942**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Copey, *Schäfer-Verwimp 130* (CR, **Dauphin 2005**); Dota cantón, Los Quetzales National Park (Amengual et al. 2007); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, Sendero Robles, *Anton 73* (CR, **Dauphin 2005**); Montañas de Tablazo, *Haupt* (**Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, 1,550 m, 18 Dec 1888, *Pittier* (G, **Uribe and Aguirre 1995**); Moravia cantón, La Palma, 5 Feb 1922, *Greenman & Greenman 5469*, det. Dauphin May 2017 (MO-5273200!, **this publication**).

PANAMA. S. loc. (Salazar Allen et al. 2017); S. loc., *Villarreal 668* (PMA, **Forrest and Crandall-Stotler 2005**). CHIRIQUÍ: Boquete distrito, Cerro Pata de Macho, *Antonio 2662* (MO, **Stotler et al. 1998**); Gualaca distrito, Fortuna (Stotler et al. 1998); Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Cerro Pata de Macho, 1,700–1,800 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna, *Spörle 1.28* (PMA, **Spörle 1990**; **Stotler et al. 1998**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, near southern edge of storage lake, 8°44.0′N, 82°14.5′W, 1,215 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34502* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34135* (JE, **Schäfer-Verwimp 2014**). PANAMA: Panamá distrito, Cerro Jefe, forest behind INTEL tower, 900–1,000 m, *Salazar Allen & Chung 5212* (PMA, **Stotler et al. 1998**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Symphyogyna sinuata (Sw.) Nees et Mont., *Voy. Amér. Mérid., Bot.* 7(1): 61, 1839 (Montagne 1839b).

≡*Jungermannia sinuata* Sw., *Prodr. (Swartz)*: 145, 1788 (Swartz 1788). Type: Jamaica.

EL SALVADOR. AHUACHAPÁN: S. loc. (**Standley and Calderón 1925**).

COSTA RICA. S. loc., *Pittier* (G, **Stephani 1900b**). CARTAGO: Jiménez cantón, Juan Viñas (Tonduz 1895b); Jiménez cantón, Juan Viñas, *Pittier 6043* (**Stephani 1893c**; **Morales 1991**; **Dauphin 2005**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Symphyogyna trivittata Spruce, *J. Linn. Soc., Bot.* 30(210): 365, 1895 (Gepp 1895). Type: Dominica.

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 518* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from the Caribbean, Western South America.

***Syzygiella* Spruce, *J. Bot.* 14: 234, 1876 (Spruce 1876a).**

Syzygiella anomala (Lindenb. et Gottsche) Steph., *Bull. Herb. Boissier*, sér. 2, 2(5): 471 (=*Spec. Hepat. [Stephani]* 2: 190), 1902 (Stephani 1902e).

≡*Plagiochila anomala* Lindenb. et Gottsche, *Syn. Hepat.* 5: 646, 1847 (Gottsche et al. 1847). Mexico.

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford and Sharp 1990; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schuster 2021); S. loc., *Gradstein & Mues 9657* (GOET, **Groth and Heinrichs 2005**; **Hentschel et al. 2006a**, **2007c**); S. loc., *Lyon 257* (GOET, **Feldberg et al. 2010b**; **Vilnet et al. 2012**); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: San Ramón cantón, La Balsa, 10°11′N, 84°30′W, *Stevens 13827*, det. Whittemore (CR, **Dauphin 2005**). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Morales 164*, det. dupl. det. H. Inoue (USJ, FLAS, **Morales 1991**). SAN JOSÉ: Cordillera de Talamanca, Cerro de la Muerte, 3,325 m, 21 Aug 1973, *Cleef*, det. S. R. Gradstein (**Inoue 1975**); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Cerro de Las Vueltas, *Dauphin et al. 3573* (CR, Dauphin 2005); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43940* (**Carl 1931a**; **Herzog 1938**; **Morales 1991**); Dota cantón, San Gerardo (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Dauphin 2005); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 3,325 m, 1973, *Cleef & Fournier 10199* (USJ, **Gradstein et al. 1977**; **Morales 1991**; **Kappelle 1996**); Pérez Zeledón cantón, Páramo Cuiricí, *Dauphin et al. 3583* (CR!, **this publication**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38692* (S, B-12165, **Inoue 1966**; **Morales 1991**; **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, *Standley 38693* (**Dauphin 2005**).

Also reported from Mexico, the Caribbean, Western South America, Brazil.

Syzygiella autumnalis (DC.) K.Feldberg, Váňa, Hentschel et Heinrichs, *Cryptog. Bryol.* 31(2): 144, 2010 (Feldberg et al. 2010a).

≡*Jungermannia autumnalis* DC., *Fl. Franç. (DC. & Lamarck)* 5(6): 202, 1815 (De Candolle and Lamarck 1815). Type: France.

≡*Jamesoniella autumnalis* (DC.) Steph., *Bull. Herb. Boissier*, sér. 2, 1(10): 1029 (=*Spec. Hepat. [Stephani]* 2: 92), 1901 (Stephani 1901d).

=*Notoscyphus paramicola* Herzog, *Rev. Bryol. Lichénol.* 11: 6, 1939 (Herzog 1938), syn. fide Grolle (1971a). Lectotype (Grolle 1971a as "holotype") or possibly holotype: Costa Rica, Prov. S. José, C. de Las Vueltas, 2,700–3,000 m, 1925, *Standley 43723a* (JE-04000935 https://je.jacq.org/JE04000935, isolectotype JE-04000934 https://je.jacq.org/JE04000934).

GUATEMALA. S. loc. (Fulford and Sharp 1990 as *Jamesoniella autumnalis*; Gradstein et al. 2001b as *Jamesoniella autumnalis*); S. loc., 1,800 m, *Sharp 2875*, *5065* (TENN, **Grolle 1971a** as *Jamesoniella autumnalis*). QUETZALTENANGO: San Carlos Sija municipio, Getenagre near Sija, 9,500 ft (2,896 m), 1 Jan 1945, *Sharp 1133* (TENN, **Gradstein and** Váňa **1987** as *Jamesoniella autumnalis*).

COSTA RICA. S. loc. (Herzog 1939 as *Jamesoniella autumnalis*; Gradstein and Váňa 1987 as *Jamesoniella autumnalis*; Fulford and Sharp 1990 as *Jamesoniella autumnalis*). SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, *Standley 43723* (**Morales 1991** as *Jamesoniella autumnalis*; **Dauphin 2005** as *Jamesoniella autumnalis*); Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, *Standley 43723a* (JE, B, S, **Herzog 1938** as *Notoscyphus paramicola*; **Grolle 1971a** as *Jamesoniella autumnalis*; **Geissler and Bischler 1989** as *Notoscyphus paramicola*); Dota cantón, El Jardín, *Morales 297* (FLAS, USJ, **Morales 1991** as *Jamesoniella autumnalis*; **Kappelle 1996** as *Jamesoniella autumnalis*; **Dauphin 2005** as *Jamesoniella autumnalis*); Salsipuedes, *Dauphin et al. 3577* (CR!, **this publication**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent(?), Indo-China, Malesia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America.

Syzygiella bilobata Inoue, *J. Hattori Bot. Lab.* 29: 186, 1966 (Inoue 1966). Holotype: Panama, Bois pr. de David, Oct 1906, *Hélion*, ex hb. Renauld (NY-1163176 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1309984, isotype G-00042019 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=56841&lang=en).

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Morales 164*, det. dupl. det. H. Inoue (USJ, FLAS, **Dauphin 2005**).

PANAMA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein 2021; Schuster 2021; Ellis et al. 2022b); S. loc., 1906, *Hélion* (PC, **Inoue 1966**; **Stotler et al. 1998**); S. loc., 1907, *Hélion* (NY, **Geissler and Bischler 1990**). CHIRIQUÍ: Boquete distrito, forest near David, Oct 1906, *Hélion* (NY-1163176 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=1309984, G-00042019, **TYPE**).

Also reported from Western South America.

Syzygiella campanulata Herzog, *Rev. Bryol. Lichénol.* 11(1): 9, 1939 (Herzog 1938). Lectotype (Inoue 1966: 199, supplemented by Söderström and Hentschel 2023: 24): Costa Rica, southern slope of the Volcán de Turrialba, 2,000–2,400 m, on tree, *Standley 35157* (JE-04007067 https://je.jacq.org/JE04007067, isolectotypes JE-04007066 https://je.jacq.org/JE04007066, US-00070931 http://n2t.net/ark:/65665/3e614bf39-67f4-43ad-a9e8-15365855ae6e, B-30001256 https://herbarium.bgbm.org/object/B300012156).

COSTA RICA. Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Cole 1982, 1983; León et al. 1998; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Schäfer-Verwimp and Pócs 2009; Gradstein 2021; Gradstein and Pócs 2021; Schuster 2021; Oliveira-da-Silva et al. 2022). CARTAGO: Turrialba cantón, Turrialba Volcano, 2,000–2,400 m, *Standley 35157* (JE-04007067, B-12156, **Herzog 1938**; **Inoue 1966**; **Geissler and Bischler 1990**; **Morales 1991**; **Dauphin 2005**;

Váňa **et al. 2014b**); Turrialba cantón, Volcán Turrialba, S slope, 2,000–2,400 m, *Standley 50418* (JE, **Inoue 1966**; **Dauphin 2005**). SAN JOSÉ: Pérez Zeledón cantón, Páramo Buena Vista, *Griffin & Eakin 569* (FLAS, **Morales 1991**; **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Syzygiella concreta (Gottsche) Spruce, *J. Bot.* 14: 274, 1876 (Spruce 1876a).

≡*Jungermannia concreta* Gottsche, *Mexik. Leverm.:* 82, 1863 (Gottsche 1863). Type: Mexico.

=*Syzygiella longifolia* Steph., *Sp. Hepat.* 6: 118, 1917 (Stephani 1917b), syn. in Feldberg et al. (2011), who rejects the synonymy with *Syzygiella perfoliata* in Inoue (1966). Lectotype (Inoue 1966: 202, supplemented by Söderström et al. 2023a: 155): Costa Rica, Alto del Pito, Mar 1893, *Tonduz s.n.* (G-00069926 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=132565&lang=en, isolectotypes Y, M).

=*Syzygiella appendiculata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 7, 1939 (Herzog 1938), syn. in Feldberg et al. (2011), who rejects the synonymy with *Syzygiella perfoliata* in Inoue (1966). Lectotype (Inoue 1966: 202, supplemented by Söderström and Hentschel 2023: 23): Costa Rica, Las Nubes, S. José, 1,500–1,900 m, *Standley 38435* (M-0082572, isolectotypes JE-04007029 https://je.jacq.org/JE04007029, US-00072916, B-300012155, S-B47753 https://herbarium.nrm.se/specimens/B47753).

COSTA RICA. S. loc., *Holz & Schäfer-Verwimp CR-991142* (GOET, **Feldberg et al. 2010b**). SAN JOSÉ: Dota cantón, Alto de Pito, Mar 1893, *Tonduz* (G-00069926 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=132565&lang=en, M, Y, **TYPE** of *Syzygiella longifolia*, **Stephani 1917b** as *Syzygiella longifolia*; **Geissler and Bischler 1990** as *Syzygiella longifolia*); Dota cantón, Alto de Pito, San Marcos, *Tonduz 15677* (M, **Feldberg et al. 2011**); Dota cantón, San Gerardo de Dota, 1,950 m, *Holz & Schäfer-Verwimp CR 99-1142* (GOET, **Feldberg et al. 2010c, 2011**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38494*, *38770* (**Herzog 1938** as *Syzygiella appendiculata*; **Geissler and Bischler 1990** as *Syzygiella appendiculata*; **Feldberg et al. 2011**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20 Mar 1924, *Standley 38435* (JE-04007029 https://je.jacq.org/JE04007029, M, US-00072916, B-300012155, S-B47753, **Herzog 1938** as *Syzygiella appendiculata*, **TYPE** of *Syzygiella appendiculata*; **Geissler and Bischler 1990** as *Syzygiella appendiculata*; **Feldberg et al. 2011**).

Also reported from West-Central Tropical Africa, East Tropical Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Subantarctic Islands.

Syzygiella macrocalyx (Mont.) Spruce, *J. Bot.* 14: 234, 1876 (Spruce 1876a).

≡*Jungermannia macrocalyx* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 248, 1843 (Montagne 1843). Type: Martinique.

=*Syzygiella apiculata* Herzog, *Beih. Bot. Centralbl.* 61B(3): 563, 1942 (Herzog 1942b), syn. fide Inoue (1966). Lectotype (Inoue 1966: 198): Costa Rica, La Palma, S. José, ~1,600 m, *Standley 32927a* (JE-04007064 https://je.jacq.org/JE04007064, isolectotype JE-04007063 https://je.jacq.org/JE04007063, B-300012154).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 2,100–2,370 m, 12 May 1992, *Allen 11997 p.p.*, det. Dauphin May 2017 (MO-6699955! http://tropicos.org/specimen/100986362, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983; Schuster 2021; Ellis et al. 2022b). CARTAGO: Paraíso cantón, Orosi, Tapantí National Park, *Griffin & Eakin 226* (FLAS, **Morales 1991**; **Dauphin 2005**). SAN JOSÉ: Moravia cantón, Camino a La Hondura, *Griffin et al. 367*, *385* (FLAS, **Morales 1991**; **Dauphin 2005**); Moravia cantón, La Palma, ~1,600 m, *Standley 32927a* (JE, **Inoue 1966**); Moravia cantón, La Palma, ~1,600 m, *Standley 32937a* (JE, B-12154, **Herzog 1942b, 1951** both as *Syzygiella apiculata*; **Geissler and Bischler 1990** as *Syzygiella apiculata*; **Morales 1991**; **Dauphin 2005**).

PANAMA. PANAMA: Panamá distrito, Cerro Jefe, behind INTEL tower, 900 m, *Salazar Allen & Gradstein 9393* (PMA, **Stotler et al. 1998**); Panamá distrito, Cerro Jefe, behind INTEL tower, 900 m, *Salazar Allen et al. 9392* (GOET, **Feldberg et al. 2010b**).

Also reported from the Caribbean, Northern South America, Brazil(?).

Syzygiella pectiniformis Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 501, 1885 (Spruce 1885). Type: Ecuador.

COSTA RICA. S. loc. (Gradstein 2021); S. loc., *Gradstein & Mues 9657* (GOET, Feldberg et al. 2010b as *Syzygiella* cf. *pectiniformis*); S. loc., *Holz CR 00-544* (GOET, Feldberg et al. 2010b as *Syzygiella* cf. *pectiniformis*). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, Sendero Brillante, 1,550 m, *Lyon 273*, det. Whittemore (CR, **Dauphin 2005**); Monteverde, 1,550 m, *Gradstein & Solano 9500*, *9524* (U, USJ, **Gradstein et al. 1994**; **Dauphin 2005**).

Also reported from Northern South America, Western South America.

Syzygiella perfoliata (Sw.) Spruce, *J. Bot.* 14: 234, 1876 (Spruce 1876a).

≡*Jungermannia perfoliata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788). Type: Jamaica.

=*Syzygiella gracillima* Herzog, *Rev. Bryol. Lichénol.* 11: 9, 1939 (Herzog 1938), syn. fide Inoue (1968). Lectotype (Inoue 1968: 306): Costa Rica; El Gallito, 2,000 m alt., 28 Oct 1928, *Valerio 60* (JE-04007078 https://je.jacq.org/JE04007078, isolectotype B-300012160 https://herbarium.bgbm.org/object/B300012160).

GUATEMALA. S. loc. (**Pérez 2009**).

***BELIZE.** *CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°48′45″N, 89°37′13″W, 1,140 m, 9 Dec 1993, *Allen 15317B*, det. Dauphin May 2017 (MO-4421607! http://tropicos.org/specimen/90019387, **this publication**).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, Rio Naranjo, ~10 km SW of Gracias, 14°32′N, 88°39′W, 12 May 1992, *Allen 11997 p.p.*, det. Dauphin May 2017 (MO-6699955! http://tropicos.org/specimen/100986362, **this publication**).

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford et al. 1970; Fulford 1987; Fulford and Sharp 1990; Schuster 2021); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); Cordillera de Talamanca, *Kappelle 139* (CR, **Kappelle 1996**). HEREDIA: Barva cantón, Cerro Gallito, 2,000 m, 28 Oct 1928, *Valerio 60* (JE-04007078 https://je.jacq.org/JE04007078, B-300012160, **TYPE** of *Syzygiella gracillima*, **Geissler and Herzog 1938** as *Syzygiella gracillima*; **Inoue 1968**; **Bischler 1990** as *Syzygiella gracillima*; **Dauphin 2005**; **Feldberg et al. 2011**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, Alto de Pito, Mar 1893, *Tonduz* (G-00069926 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=132565&lang=en, M, Y, **Inoue 1966**, but rejected as *Syzygiella concreta* by Feldberg et al. 2011; **Morales 1991**); Dota cantón, San Gerardo (Dauphin 2005); Moravia cantón, La Palma, *Pittier 6002* (**Dauphin 2005**); Tarrazú cantón, La Palma Forest, Feb 1891, *Pittier 6002* (G-5273, **Stephani 1893c**; **Morales 1991**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38692* (S, B-12165, **Dauphin 2005**); Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, 20 Mar 1924, *Standley 38435* (JE-04007029 https://je.jacq.org/JE04007029, M, US-00072916, B-300012155, S-B47753, **Inoue 1966**; **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Ellis et al. 2022b). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 260* (PMA, **Dauphin 2007**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Syzygiella rubricaulis (Nees) Steph., *Bull. Herb. Boissier*, sér. 2, 2(5): 468 (=*Spec. Hepat. [Stephani]* 2: 187), 1902 (Stephani 1902e).

≡*Jungermannia rubricaulis* Nees, *Fl. Bras. (Martius)* 1(1): 344, 1833 (Nees 1833b). Type: Brazil.

≡*Jamesoniella rubricaulis* (Nees) Grolle, *Bryologist* 71(4): 355, 1968 (Grolle 1968b).

GUATEMALA. S. loc. (Fulford 1987 as *Jamesoniella rubricaulis*; Fulford and Sharp 1990 as *Jamesoniella rubricaulis*). ALTA VERAPAZ: Cobán, 1,600 m, *Lüchheim* (G, **Inoue 1966**); Cobán, 1,350 m, *Türckheim 5495* (FI, **Grolle 1971a** as *Jamesoniella rubricaulis*); Cobán, Las Victorias National Park, 1,700 m, 2002 (**Andersohn 2004** as *Jamesoniella 'rubricaria'*); Tucurú, *Pérez 184* (USCG, Pérez 2006 as *Jamesoniella rubricaulis*, **2009** as *Jamesoniella rubricaulis*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Jamesoniella rubricaulis*). SACATEPÉQUEZ: Volcán de Agua, det. Inoue 1967 (NY, Pérez 2009).

BELIZE. TOLEDO: S. loc., Dec 1993, *Allen 15317B* (BRH, MO, **Whittemore and Allen 1996** as *Jamesoniella rubricaulis*).

***HONDURAS.** *ATLÁNTIDA: El Porvenir municipio, Pico Bonito National Park, upper slopes and summit of Pico Bonito, 15°37′N, 86°53′W, 23 Apr 1996, *Allen 17573*, det. Dauphin 2017 (MO-4428672! http://tropicos.org/specimen/90039820, **this publication**). *CORTÉS: San Pedro Sula municipio, Cusuco National Park, from Rio Cusuco to summit of Cerro Jilinco ~22 km W of San Pedro Sula, 16 km S of Cuyamel, 15°31′N, 88°14′W, 20 Mar 1993, *Allen 14250*, det. Whittemore 1994 (MO-3982134! http://tropicos.org/specimen/90019192, **this publication**). *LEMPIRA: Gracias municipio, Montaña de Celaque, trail overlooking waterfall of Rio Arquecal, 14°33′N, 88°40′W, 16 May 1992, *Allen 12188*, det. Whittemore 1992 (MO-3965010! http://tropicos.org/specimen/100955946, **this publication**). *OLANCHO: Catacamas municipio, Sierra de Algalta, La Chorrera, 13 km NNW of Catacamas, 14°57′N, 85°55′W, 2 Jun 1992, *Allen 12735*, det. Whittemore 1992 (MO-3964991!, **this publication**).

COSTA RICA. S. loc. (Pagán 1939c; Cole 1982, 1983; Fulford 1987 as *Jamesoniella rubricaulis*; Fulford and Sharp 1990 as *Jamesoniella rubricaulis*; **Gradstein 1993**, 1999a both as *Jamesoniella rubricaulis*; Dauphin 2005 as *Jamesoniella rubricaulis*; Gradstein and Holz 2005 as *Jamesoniella rubricaulis*; Mandl 2007 as *Jamesoniella rubricaulis*; Ellis et al. 2022b); S. loc., *Pittier* (G, **Stephani 1902e**); Cordillera de Talamanca (**Holz and Gradstein 2005b** as *Jamesoniella rubricaulis*; Holz 2006 as *Jamesoniella rubricaulis*); Cordillera de Talamanca, *Kappelle 3391* (U, **Kappelle 1996** as *Jamesoniella rubricaulis*). ALAJUELA: Poás Volcano, *Morales & Canessa 443* (USJ, **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*). CARTAGO: El Guarco cantón, La Chonta, *Mata 42 p.p.* (USJ, **Dauphin 2005** as *Jamesoniella rubricaulis*); Pococí cantón, La Georgina, *Griffin et al. 442*, *489* (FLAS, **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Turrialba cantón, Turrialba Volcano, *Morales 521* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*). HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51999* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); San Isidro cantón, Cerro de Caricias, *Standley 52237*, *52239* (**Morales 1991** as *Jamesoniella rubricaulis*); San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 52259*, *52277* (**Dauphin 2005** as *Jamesoniella rubricaulis*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50345*, *50437*, *50488*, *50501*, *50535*, *50677* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); San Isidro cantón, Cerro Zurquí, 2,000–2,400 m, *Standley 50694* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*). LIMÓN: Chirripó Grande, 3,700 m, *Kupper 1144* (JE, M, S, **Grolle 1971a** as *Jamesoniella rubricaulis*). PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Jamesoniella rubricaulis*); Monteverde, <1,500 m (Dauphin 2005 as *Jamesoniella rubricaulis*); Monteverde cantón, west-facing slope of the

Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,470–1,545 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995** as *Jamesoniella rubricaulis*); Monteverde, Mar 1963, *James*, det. Dauphin Jun 2017 (MO-6167934!, **this publication**). SAN JOSÉ: Acosta cantón, Cangrejal, Cerro Caraigres, *Dauphin 3382* (CR, **Dauphin 2005** as *Jamesoniella rubricaulis*); Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002** as *Jamesoniella rubricaulis*); Dota cantón, San Gerardo (Dauphin 2005 as *Jamesoniella rubricaulis*); Dota cantón, San Gerardo, *Holz* (**Holz 2003** as *Jamesoniella 'rubicaulis'*); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a** as *Jamesoniella rubricaulis*); Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48176*, *48183*, *48211* (**Grolle 1971a** as *Jamesoniella rubricaulis*; **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Moravia cantón, La Hondura, *Griffin et al. 349*, det. Grolle (FLAS, **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51816* (**Grolle 1971a** as *Jamesoniella rubricaulis*; **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Moravia cantón, La Palma, 1,550 m, *Pittier 2* (M, **Inoue 1966**; **Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Moravia cantón, La Palma, *Pittier 6007* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*); Pan-American Highway Sur, km 54–61, *Boza 2014*, det. Gradstein (B-274003, **Dauphin 2005** as *Jamesoniella rubricaulis*); Pérez Zeledón cantón, Chirripó National Park, Valle de Los Conejos, *Kuhbier 609*, det. Grolle (B-225735, **Dauphin 2005** as *Jamesoniella rubricaulis*); Pérez Zeledón cantón, Páramo Buena Vista, *Dauphin 2629* (CR, **Dauphin 2005** as *Jamesoniella rubricaulis*); Pérez Zeledón cantón, Páramo Buena Vista, *Kuhbier 340*, det. Grolle (B-225745, **Dauphin 2005** as *Jamesoniella rubricaulis*); Vásquez de Coronado cantón, Las Nubes, ~1,900 m, *Standley 38431*, *38461*, *38836* (**Morales 1991** as *Jamesoniella rubricaulis*; **Dauphin 2005** as *Jamesoniella rubricaulis*).

PANAMA. S. loc. (Gradstein 1999a as *Jamesoniella rubricaulis*; Ellis et al. 2022b). *CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 321* (PMA, **Dauphin 2007** as *Jamesoniella rubricaulis*); Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1557*, *1568*, *1576 p.p.* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Jamesoniella rubricaulis*); Parque Internacional La Amistad, Cerro Fábrega, 3,200 m, 1995, *Dauphin et al. 1576* (GOET, **Feldberg et al. 2010b**).

Also reported from Macaronesia, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Syzygiella setulosa Steph., *Bull. Herb. Boissier*, sér. 2, 2(5): 489 (=*Spec. Hepat. [Stephani]* 2: 188), 1902 (Stephani 1902e). Lectotype: Guadeloupe.

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013). ALAJUELA: San Ramón cantón, La Balsa, 10°11′N, 84°30′W, 1,050–1,150 m, 10 Sep 1979, *Stevens 14260*, det. Whittemore (CR, **Dauphin 2005**).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Syzygiella sonderi (Gottsche) K.Feldberg, Váňa, Hentschel et Heinrichs, *Cryptog. Bryol.* 31: 143, 2010 (Feldberg et al. 2010a).

≡*Jungermannia sonderi* Gottsche, *Linnaea* 28(5): 550, 1856 (Gottsche 1856). Type: Australia.

=*Jungermannia grandiflora* Lindenb. et Gottsche, *Syn. Hepat. 5*: 673, 1847 (Gottsche et al. 1847), syn. fide Feldberg et al. (2010a). Type: Chile.

≡*Cryptochila grandiflora* (Lindenb. et Gottsche) Grolle, *Feddes Repert.* 82(1): 19, 1971 (Grolle 1971a).

GUATEMALA. S. loc. (Engel 1978 as *Cryptochila grandiflora*, 1990 as *Cryptochila grandiflora*; Fulford and Sharp 1990 as *Cryptochila grandiflora*; Váňa 1991 as *Cryptochila grandiflora*; Bednarek-Ochyra et al. 2000 as *Cryptochila grandiflora*; Schuster 2002 as *Cryptochila grandiflora*; Váňa and Gremmen 2005 as *Cryptochila grandiflora*; Váňa and Engel 2013; Váňa et al. 2014c; Ellis et al. 2015a). ALTA VERAPAZ: Cobán, 1,600 m, *Türckheim 1349a* (FI, **Grolle 1971a** as *Cryptochila grandiflora*). ZACAPA: S. loc., 2,200–2,400 m, *Steyermark 42657* (F, hb. Fulford, **Grolle 1971a** as *Cryptochila grandiflora*).

***HONDURAS.** *LEMPIRA: Gracias municipio, Montaña de Celaque, SE portion of the massif, valley of Rio Arcagual on the plateau, 14°33′26″N, 88°40′00″W, 26–27 May 1991, *Davidse 34793*, det. Whittemore (MO-4424315! http://tropicos.org/specimen/90042976, **this publication**); Gracias municipio, Montaña de Celaque, SE portion of the massif, valley of Rio Arcagual on the plateau, 2,400 m, 14°33′26″N, 88°40′00″W, 26–27 May 1991, *Davidse 34794*, det. Whittemore (MO-4424312! http://tropicos.org/specimen/90042975, **this publication**); Gracias municipio, Rio Arcagual, 14°35′N, 88°41′W, 16 Nov 1991, *Allen 11515*, det. Dauphin Jun 2017 (MO-5227635! http://tropicos.org/specimen/90096762, **this publication**).

COSTA RICA. S. loc. (Gradstein and Holz 2005 as *Cryptochila grandiflora*; Váňa and Engel 2013; Váňa et al. 2014c; Ellis et al. 2015a); Cordillera de Talamanca (Holz 2003 as *Cryptochila grandiflora*; **Holz and Gradstein 2005b** as *Cryptochila grandiflora*). ALAJUELA: Poás Volcano, 30 Jul 1977, *Griffin & Araya 2*, *9*, *11* (USJ, FLAS, **Morales and Griffin 1983** as *Cryptochila grandiflora*; **Morales 1991** as *Cryptochila grandiflora*; **Dauphin 2005** as *Cryptochila grandiflora*). CARTAGO: Páramo Buenavista, 3,300 m, *Dauphin 2237* (CR, **Dauphin 2005** as *Cryptochila grandiflora*).

PANAMA. S. loc. (Gradstein 1999a as *Cryptochila grandiflora*; Váňa and Engel 2013; Váňa et al. 2014c; Ellis et al. 2015a). CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1575* (GOET, CR, PMA, U, **Stotler et al. 1998** as *Cryptochila grandiflora*; **Dauphin 2007** as *Cryptochila grandiflora*).

Also reported from South Tropical Africa, Southern Africa, Western Indian Ocean, Malesia, Papuasia, Australia, New

Zealand, Mexico, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands, Antarctic Continent.

Syzygiella tonduzana Steph., *Sp. Hepat. (Stephani)* 6: 118, 1917 (Stephani 1917b). Lectotype (Inoue 1966: 190 as "type") if not holotype: Costa Rica, Alajuela, P. N. V. Poás, 2,500 m, 1896, *Tonduz s.n., hb. Levier 6275* (G-00042069 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=82824&lang=en).

=*Syzygiella tonduzana* f. *setulosa* Herzog ex Carl, *Hedwigia* 71(5): 288, 1931 (Carl 1931a), syn. fide Inoue (1966). Lectotype (Söderström and Hentschel 2023: 24): Costa Rica, La Palma, prov. San José, 1,600 m, 17 Mar 1924, *Standley 38013* (JE-04007164 https://je.jacq.org/JE04007164, isolectotypes B-12171, US-00072919 http://n2t.net/ark:/65665/3290ca1e1-3f9b-48c9-ba28-b90d80f36c50).

≡*Syzygiella tonduzana* var. *setulosa* (Herzog ex Carl) Herzog, *Rev. Bryol. Lichénol.* 11(1): 7, 1939 (Herzog 1938).

=*Syzygiella tonduzana* f. *depauperata* Herzog, *Rev. Bryol. Lichénol.* 11(1): 7, 1938 (Herzog 1938), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. fide Söderström and Hentschel (2023). Original material: Costa Rica, La Hondura, province of San José, altitude 1,300 to 1,700 m, on tree, 2–4 Mar 1924, *Standley 36299* (JE-04007163 https://je.jacq.org/JE04007163).

COSTA RICA. S. loc. (Cole 1982, 1983; Nöske et al. 2003; So and Grolle 2003; Gradstein 2021; Schuster 2021; Ellis et al. 2022b); S. loc., *Gradstein 9500* (GOET, **Feldberg et al. 2010b**); S. loc., *Lyon 48* (GOET, **Feldberg et al. 2010b**); S. loc., *Tonduz* (**Stephani 1917b**; **Geissler and Bischler 1990** also as *Syzygiella tonduzana* var. *setulosa*). ALAJUELA: Poás Volcano, *Tonduz Levier 6275* (G, **Morales 1991**; **Dauphin 2005**); Poás Volcano, 2,500 m, *Tonduz* (**Inoue 1966** as *Syzygiella tonduzana* f. *depauperata*). SAN JOSÉ: Moravia cantón, La Hondura, 1,300–1,700 m, *Standley 36299* (**Herzog 1938** as *Syzygiella tonduzana* f. *depauperata*); Moravia cantón, La Hondura, *Standley 51803* (B-12171, **Dauphin 2005**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51813* (S, B-12131, **Herzog 1938** as *Syzygiella tonduzana* var. *setulosa*; **Inoue 1966**; **Morales 1991**); Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38013* (JE-04007164, B-12171, **TYPE** of *Syzygiella tonduzana* f. *setulosa*, **Carl 1931a** as *Syzygiella tonduzana* f. *setulosa*; **Herzog 1938** as *Syzygiella tonduzana* var. *setulosa*; **Geissler and Bischler 1990** as *Syzygiella tonduzana* f. *setulosa*).

PANAMA. CHIRIQUÏ: Boquete, Los Naranjos, buffer zone of Parque Internacional La Amistad (PILA) along trail of El Pianista, 8°49′07.4″N, 82°25′20″W, 1,410 m, 5 Mar 2022, det. Á. Benítez, *Arrocha 3295* (UCH, **Ellis et al. 2022b**).

Also reported from Western South America.

Syzygiella trigonifolia (Steph.) Herzog, *Hedwigia* 74(2): 87, 1934 (Herzog 1934).

≡*Jamesoniella trigonifolia* Steph., *Biblioth. Bot.* 21(87): 185, 1916 (Stephani 1916b). Lectotype: Bolivia.

=*Syzygiella liberata* Inoue, *Bull. Natl. Sci. Mus. Tokyo*, n.s., 17(4): 301, 1974 (Inoue 1974), syn. fide Váňa et al. (2014b). Type: Colombia.

COSTA RICA. S. loc. (Gradstein 1999a as *Syzygiella liberata*; Dauphin 2005 as *Syzygiella liberata*; Gradstein and Holz 2005 as *Syzygiella liberata*; Santos 2008 as *Syzygiella liberata*; Costa and Santos 2009 as *Syzygiella liberata*); Cordillera de Talamanca (Holz 2003 as *Syzygiella liberata*; **Holz and Gradstein 2005b** as *Syzygiella liberata*).

Also reported from Western South America, Brazil.

Targionia L., *Sp. Pl.* 1: 1136, 1753 (Linnaeus 1753).

Targionia hypophylla L., *Sp. Pl.* 1: 1136, 1753 (Linnaeus 1753). Type: Italy?

GUATEMALA. BAJA VERAPAZ: S. loc., *Standley 69741* (NY, Pérez 2009). CHIMALTENANGO: S. loc., *Standley 57834* (NY, Pérez 2009). *HUEHUETENANGO: San Rafael Petzal municipio, ~20 km N Huehuetenango, 15°28′45.8″N, 91°31′47.7″W, 4 Apr 2007, *Laeger et al. 3677*, det. Brinda and Dauphin 2017 (MO-6160449!, **this publication**). *QUETZALTENANGO: Zunil, Zunil municipio, road to Fuentes Georginas, 4 km S of Zunil, NW slopes of Pico Zunil, 14°45′15.6″N, 91°28′58.4″W, 25 May 2005, *Quedensley 493*, det. Dauphin Sep 2017 (F, MO, W-0089086!, **this publication**). SACATEPÉQUEZ: S. loc., *Standley 58986* (NY, Pérez 2009).

EL SALVADOR. S. loc. (Haynes et al. 1923; Bischler-Causse et al. 2005). SAN SALVADOR: S. loc. (**Standley and Calderón 1925**; **Svihla 1942**); near San Salvador, 1921–1922, *Standley 19590* (US, **Evans 1923b**); near San Salvador, 1921–1922, *Standley* (Haupt 1942).

NICARAGUA. ESTELÍ: Estelí municipio, Loma Ocotecalzado, 13°10′N, 86°18′W, 1,260–1,300 m, 15 Nov 1979, *Stevens & Grijalva 15688* (MO-5223960, **Bischler-Causse et al. 2005**).

COSTA RICA. S. loc. (Cole 1984; Arrocha et al. 2020; Ruklani and Rubasinghe 2022). CARTAGO: Oreamuno cantón, Irazú Volcán, Pacific side, 6 Jul 1941, *Svihla 41-456* (**Svihla 1942**). SAN JOSÉ: Escazú cantón, Escazú, 4 mi W of San José, 5,000 ft (1,524 m), 18 Jul 1940, *Haupt* (**Haupt 1942**; **Morales 1991**; **Dauphin 2005**); Pérez Zeledón cantón, Cerro Buenavista, 9°33–34′N, 83°41–46′W, 20 Sep 1983, *Davidse 24958B*, det. Brinda and Dauphin Jun 2017 (MO-5223959!, **this publication**); Santa Ana cantón, El Rodeo, 26 Aug 1979, *Jovet-Ast* (PC, **Bischler-Causse et al. 2005**).

PANAMA. CHIRIQUÍ: Boquerón distrito, Parque Nacional Volcán Barú, Localidad, Finca El Aguacatal, 8°47′22.2′N, 82°34′33.6′W, 2072, 4 Aug 2014, *Arrocha 2967* (UCH, **Arrocha et al. 2020**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Siberia, Russian Far East, Middle Asia, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia, Indian Subcontinent, Indo-China, Malesia(?), Papuasia, Australia, New Zealand, Southeastern Pacific, Northeastern Pacific,

Western Canada, Northwestern USA, Southwestern USA, South-Central USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Taxilejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 125, 1893 (Schiffner 1893a).

Note: The type of *Taxilejeunea* is now a *Lejeunea* species, but several taxa have yet to be transferred.

Taxilejeunea coilantha Herzog, *Rev. Bryol. Lichénol.* 20: 159, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 24) if not holotype: Costa Rica, La Hondura, Prov. San José, 1,200–1,500 m, *Standley 51801* (JE-04002598 https://je.jacq.org/JE04002598).

COSTA RICA. SAN JOSÉ: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51801* (JE-04002598 https://je.jacq.org/JE04002598, **TYPE, Herzog 1951; Geissler and Bischler 1990; Morales 1991**).

Not found outside Central America.

Taxilejeunea dissitifolia Steph., *Symb. Antill.* 2: 472, 1901 (Stephani 1901b). Type: Guadeloupe.

PANAMA. S. loc., 1906, *Hélion* (PC, **Bischler 1966**).

Also reported from the Caribbean, Western South America(?).

Taxilejeunea grandifolia Steph., *Biblioth. Bot.* 21(87): 261, 1916 (Stephani 1916b). Type: Bolivia.

COSTA RICA. †ALAJUELA: Alajuela cantón, Viento Fresco, 1,600–1,900 m, *Standley 47982* (B-26125, **Herzog 1951; Morales 1991**). Note: The specimen of *Taxilejeunea grandifolia* examined by Dauphin (2005, Standley 47982, B-26125), among those reported by Herzog (1951), contains sterile material of *Lejeunea lancifolia*. GUANACASTE: Tilarán cantón, La Tejona, N of Tilarán, 600–700 m, *Standley 45926* (**Herzog 1951; Morales 1991**). SAN JOSÉ: Dota cantón, Santa María, 1,500–1,800 m, *Standley 43239* (US, **Herzog 1951; Morales 1991; Kappelle 1996**).

Also reported from Western South America.

Taxilejeunea herzogiana Steph., *Biblioth. Bot.* 21(87): 262, 1916 (Stephani 1951), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Bolivia.

COSTA RICA. CARTAGO: Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 47128a* (**Herzog 1951**). SAN JOSÉ: Moravia cantón, Bajo de La Hondura, *Standley 51842* (US, **Morales 1991**); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51842 p.p.* (JE, **Herzog 1951**); Moravia cantón, La Hondura, *Standley 57128a* (**Morales 1991**).

Also reported from Western South America.

Taxilejeunea jamaicensis A.Evans, *Bull. Torrey Bot. Club* 48(4): 117, 1921 (Evans 1921b). Type: Jamaica.

BELIZE. S. loc. (**Fulford 1938**; Whittemore and Allen 1996).

Also reported from the Caribbean.

Taxilejeunea maxima Steph., *Sp. Hepat. (Stephani)* 5: 473, 1914 (Stephani 1914). Lectotype (Söderström et al. 2023a: 155) if not holotype: Guatemala, Alta Verapaz, near Cobán, 1,600 m, Mar 1908, *Türckheim* (G-00047593 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146432&lang=en).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,600 m, Mar 1908, *Türckheim* (G-00047593 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146432&lang=en, **TYPE, Stephani 1914**).

Not found outside Central America.

Taxilejeunea mucronata Steph., *Sp. Hepat. (Stephani)* 5: 473, 1914 (Stephani 1914). Lectotype (Söderström et al. 2023a: 155) if not holotype: Guatemala, s. loc., *Türckheim, hb. Levier 5072* (G-00113327 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147592&lang=en).

GUATEMALA. S. loc., *Türckheim hb. Levier 5072* (G-00113327, **TYPE, Stephani 1914**).

Not found outside Central America.

Taxilejeunea parvibracteata Steph., *Hedwigia* 35: 136, 1896 (Stephani 1914). Lectotype (Söderström et al. 2023a: 155): Costa Rica, Cartago, Turrialba, Río Naranjo, 200–250 m, 1893, *Tonduz*, hb. Vetter 3077/F (G-00124029 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147571&lang=en, G-00124030 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147580&lang=en, G-00124031 https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=147577&lang=en).

COSTA RICA. S. loc. (Stephani 1914; **Fulford and Sharp 1990**). CARTAGO: Jiménez cantón, Rio Naranjo, 200–250 m, 1893, *Tonduz*, hb. Vetter 3077f (G-00124029, G-00124030, G-00124031, **TYPE, Stephani 1896; Geissler and Bischler 1990; Lee et al. 2018**).

Also reported from Mexico.

Taxilejeunea planilobula Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 160, 1951 (Herzog 1951). Lectotype (Söderström and Hentschel 2023: 24) if not holotype: Costa Rica, El Muñeco, S of Navarro, Prov. Cartago, ~1,400 m, *Standley 33470 p.p.* (JE-04002558 https://je.jacq.org/JE04002558).

COSTA RICA. CARTAGO: Cartago cantón, El Muñeco, S of Navarro, ~1,400 m, *Standley 33470 p.p.* (JE-04002558 https://je.jacq.org/JE04002558, **TYPE, Herzog 1951; Geissler and Bischler 1990; Morales 1991**).

Not found outside Central America.

Taxilejeunea surinamensis (Lindenb. et Gottsche) Steph., *Hedwigia* 29(3): 142, 1890 (Stephani 1890a).

≡*Omphalanthus surinamensis* Lindenb. et Gottsche, *Linnaea* 24(6): 628, 1851 (Lindenberg and Gottsche 1851). Type: Surinam.

COSTA RICA. LIMÓN: Pococí cantón, Braulio Carrillo National Park, Botarrama trail, 480 m, *Lücking 92-139* (**Dauphin 2005**); Pococí cantón, Braulio Carrillo National Park,

Botarrama trail, 480 m, Mar 1991–Jun 1992, *Lücking 91-139* (hb. Lücking, USJ, **Lücking 1995**; **Dauphin et al. 1998**); *Lücking 92-226*, *92-447*, *92-448* (hb. Lücking, **Lücking 1995**); Pococí cantón, Braulio Carrillo National Park, Botarrama trail, valley of the Río Sucio, 480 m, 1995, *Lücking* (**Lücking 1997**).

Also reported from the Caribbean, Northern South America.

Taxilejeunea umbonata Steph., *Sp. Hepat. (Stephani)* 5: 481, 1914 (Stephani 1914). Lectotype (Söderström et al. 2023a: 156) if not holotype: Guatemala, Alta Verapaz, in silva primaeva prope Cobán, 1,600 m, Mar 1908, *Türckheim*, Bryotheca Levier 5827 (G-00047596 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146435&lang=en).

GUATEMALA. ALTA VERAPAZ: Cobán, 1,600 m, Mar 1908, *Türckheim*, *Bryotheca Levier 5827* (G-00047596 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=146435&lang=en, **Stephani 1914, TYPE**).

Not found outside Central America.

Telaranea Spruce ex Schiffn., *Hepat. (Engl.-Prantl)*: 103, 1893 (Schiffner 1893a).

Telaranea apiahyna (Steph.) Fulford, *Brittonia* 15(1): 71, 1963 (Fulford 1963b).

≡*Lepidozia apiahyna* Steph., *Sp. Hepat. (Stephani)* 3: 572, 1909 (Stephani 1909b). Type: Brazil.

COSTA RICA. CARTAGO: Paraíso cantón, NW of Cerro La Asunción, 3,130 m, *Engel 8444* (F, **Engel and Smith Merrill 2004**).

Also reported from Northern South America, Western South America, Brazil.

Telaranea diacantha (Mont.) J.J.Engel et G.L.Merr., *Fieldiana, Bot.*, n.s., 44: 145, 2004 (Engel and Smith Merrill 2004).

≡*Jungermannia diacantha* Mont., *Ann. Sci. Nat. Bot.*, sér. 4, 5: 349, 1856 (Montagne 1856a). Type: Peru.

≡*Arachniopsis diacantha* (Mont.) M.Howe, *Bull. Torrey Bot. Club* 29(5): 288, 1902 (Howe 1902).

GUATEMALA. ALTA VERAPAZ: Tucurú municipio, Chelemhá, 15°22′32″N, 90°05′05″W, *Pérez 217* (USCG, Pérez 2006 as *Arachniopsis diacantha*, **2009** as *Arachniopsis diacantha*). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 1*, *39*, *40*, *145*, *etc.* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Arachniopsis diacantha*). EL PROGRESO: San Agustín Acasaguastlán municipio, Caserío Albores del Carmen, Sierra de Las Minas, 15°03′30″N, 89°57′50″W, 1,380 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Arachniopsis diacantha*). ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007** as *Arachniopsis diacantha*).

COSTA RICA. S. loc. (Gradstein et al. 2001b as *Arachniopsis diacantha*). CARTAGO: Paraíso cantón, Tapanti National Park, 24 Apr 1983, *Herrera*, det. Morales (USJ, **Morales 1991** as *Arachniopsis diacantha*). GUANACASTE: Liberia cantón, Rincón de la Vieja National Park, Sector Santa María, Dos Ríos, *Dauphin 2333* (CR, **Dauphin 2005** as *Arachniopsis diacantha*). HEREDIA: Sarapiquí cantón, at confluence of Río Sarapiquí and Río Puerto Viejo, *Grayum 9640.1* (CR, **Dauphin 2005** as *Arachniopsis diacantha*). PUNTARENAS: Coto Brus cantón, Fila Cruces, Cerro Paraguas, *Dauphin 1752* (CR, **Dauphin 2005** as *Arachniopsis diacantha*); Osa cantón, Rincón, trail Boscosa–Cerro Chocuaco, 450 m, *Gradstein & Dauphin 9320a* (U, USJ, **Gradstein et al. 1994** as *Arachniopsis diacantha*; **Dauphin 2005** as *Arachniopsis diacantha*).

PANAMA. CHIRIQUÍ: Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 710 m, 1 Aug 2012, *Dauphin & Salazar Allen 4518 p.p.* (PMA, **Dauphin et al. 2015**).

COCOS I. S. loc., 250 m, 14 Feb 1994, *Dauphin A-5* (USJ, **Dauphin 1995**, **1999**, both as *Arachniopsis diacantha*); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 960 p. p* (USJ, **Dauphin 1995**, **1999**, **2005**, all as *Arachniopsis diacantha*); Mirador a Bahía Wafer, 5°32′57″N, 87°03′56″W, 250 m, *Dauphin A-5/10*, det. G. Dauphin Feb 2021 (USJ-47178!, CR-4468324!, W!, **this publication**); Mirador a Bahía Wafer, 5°32′57″N, 87°03′56″W, 250 m, *Dauphin A-7 sp. 10*, det. G. Dauphin Mar 2021 (USJ-47178!, CR!, **this publication**); Mirador a Bahía Wafer, 5°32′57″N, 87°03′56″W, 250 m, 15 Feb 1995, *Dauphin A-5/10* (USJ, **Gradstein et al. 1994** as *Arachniopsis diacantha*; **Dauphin 1995**, **2005**, both as *Arachniopsis diacantha*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, the Caribbean, Northern South America, Western South America, Brazil.

Telaranea nematodes (Gottsche ex Austin) M.Howe, *Bull. Torrey Bot. Club* 29(5): 284, 1902 (Howe 1902).

≡*Cephalozia nematodes* Gottsche ex Austin, *Bull. Torrey Bot. Club* 6(52): 302, 1879 (Austin 1879). Type: Cuba.

GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009; Cañiza et al. 2017; Lavocat Bernard 2018). ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012**); Tucurú, *Pérez 80* (USCG, Pérez 2006, **2009**). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 81*, *136*, *141*, *143*, *169*, *196*, *209*, *249* (USCG, **Freire et al. 2013**); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). CHIQUIMULA: Jocotán municipio, Cerro Tixixi (Tishishi), 3–5 mi (4.8–8 km) N Jocotán, 500–1,500 m, *Steyermark 31629* (F, **Engel and Smith Merrill 2004**). HUEHUETENANGO: S. loc., *Pérez 1194* (USCG, Pérez 2009). QUETZALTENANGO: Zunil municipio, Fuentes

Georginas, W slope of Volcán de Zunil, Quezaltenango, ~2,850 m, *Standley 67425* (DUKE, **Engel and Smith Merrill 2004**). QUICHÉ: S. loc., *Pérez 2339* (USCG, Pérez 2009).

BELIZE. TOLEDO: S. loc., Dec 1993, *Allen 15304B* (BRH, MO, **Whittemore and Allen 1996**); S. loc., Dec 1993, *Allen 15348*, *15365* (BRH, MO, **Whittemore and Allen 1996**).

HONDURAS. S. loc. (Fulford 1987; Fulford and Sharp 1990; Schäfer-Verwimp and Pócs 2009; Cañiza et al. 2017; Lavocat Bernard 2018). EL PARAÍSO: El Paraíso municipio, region of Agua Amarilla, above El Zamorano, 900–1,100 m, *Standley et al. 5115* (F, **Engel and Smith Merrill 2004**).

COSTA RICA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Lavocat Bernard 2018); Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). ALAJUELA: San Ramón cantón, La Balsa, 10°11′N, 84°30′W, *Stevens 13722* (CR, **Dauphin 2005**). GUANACASTE: Liberia cantón, Guanacaste National Park, Sector Pitilla, *Dauphin 1904* (CR, **Dauphin 2005**); Liberia cantón, Guanacaste National Park, Sector Volcán Cacao, 10°55′43″N, 85°28′10″W, *Dauphin 2471* (CR, **Dauphin 2005**). HEREDIA: Barva cantón, Braulio Carrillo National Park, Sector Volcán Barva, *Morales 1958* (**Morales 1991**; **Dauphin 2005**); Sarapiquí cantón, El Plástico, *Dauphin 2176* (CR, **Dauphin 2005**). PUNTARENAS: S. loc. (**Merwin et al. 2001**); Coto Brus cantón, Fila Cruces, *Dauphin 1721* (CR, **Dauphin 2005**); Monteverde, <1,500 m (Dauphin 2005); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a**); Monteverde cantón, west-facing slope of the Cordillera de Tilarán, adjacent to the Monteverde Cloud Forest Reserve, 10°18′N, 84°48′W, 1,545–1,560 m, 1990, *Gradstein et al.* (U, **Sillett et al. 1995**). SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Dota cantón, south of El Empalme, *Little 5643* (FULF, hb. Little, **Morales 1991**; **Kappelle 1996**; **Dauphin 2005**); Los Santos Forest Reserve, ~2,900 m, **Holz and Gradstein 2005a**); S de San José, *Little 5511* (hb. Little, **Morales 1991**; **Dauphin 2005**).

PANAMA. S. loc. (Gradstein 1999a; Lavocat Bernard 2018). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, Quebrada Bonita, 920–1,150 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, *Gradstein 9775b* (GOET, **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, *Stotler & Crandall-Stotler 3499* (ABSH, **Stotler et al. 1998**); Barú Volcano National Park (**Rodríguez-Quiel et al. 2022**). DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,150 m, *Salazar Allen & Gradstein 9270*, *9271* (PMA, **Stotler et al. 1998**); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Cerro Pirre, summit, 1,100–1,200 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); Summit of Pirre Massif, 1,200–1,350 m, *Allen 8851B* (MO, **Stotler et al. 1998**). NASO TJËR DI COMARCA: Cerro Fábrega, *De Gracia 298* (PMA, **Dauphin 2007**). PANAMA: Panamá distrito, Altos de Cerro Azul, Sendero El Cantar, *Stotler & Crandall-Stotler 3501* (ABSH, **Stotler et al. 1998**). VERAGUAS: Santa Fe distrito, N of Santa Fe, *Mori & Kallunki 2644* (MO, **Stotler et al. 1998**).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Temnoma Mitt., *Handb. N. Zeal. fl.* 2: 750, 1867 (Hooker 1867).

Temnoma chaetophyllum R.M.Schust., *Phytologia* 39(4): 239, 1978 (Schuster 1978a). Type: Venezuela.

COSTA RICA. ALAJUELA: San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, 23 Mar 2010, *Fenton* (UC-2053637, **Norris et al. 2017**).

Also reported from Northern South America, Western South America.

Thysananthus Lindenb., *Nov. Stirp. Pug.* 8: 24, 1844 (Lindenberg 1844).

Thysananthus amazonicus (Spruce) Schiffn. *Hepat. (Engl.-Prantl)*: 130, 1893 (Schiffner 1893a).

≡*Lejeunea amazonica* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 106, 1884 (Spruce 1884). Type: Brazil.

COSTA RICA. S. loc. (Stephani 1912b; Gradstein et al. 2001b; Gradstein and Costa 2003; Zartman and Ilkiu-Borges 2007; Gradstein and Uribe 2016; Costa et al. 2017, 2020; Gradstein 2021). LIMÓN: Pococí cantón, Cuatro Esquinas de San Juan, 40 m, *Dauphin et al. 1670* (CR, **Dauphin et al. 1998**; **Dauphin 2005**); Pococí cantón, Tortuguero National Park, north slope of Cerro Coronel, 0 m, *Cleef & Kappelle* (USJ, GOET, **Dauphin et al. 1998**; **Dauphin 2005**; **Sukkharak 2011, 2015**); Pococí cantón, Tortuguero, 10°31′N, 83°32′W, 2 Aug 1993, *Timme 1159*, det. Dauphin Jun 2017 (MO-6690026!, **this publication**).

PANAMA. S. loc. (Gradstein 2021). COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 710 m, 1 Aug 2012, *Dauphin & Salazar Allen 4524 p.p.* (PMA, **Dauphin et al. 2015**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Thysananthus auriculatus (Wilson et Hook.) Sukkharak et Gradst., *Phytotaxa* 326(2): 102, 2017 (Sukkharak and Gradstein 2017) var. ***auriculatus***.

≡*Jungermannia auriculata* Wilson et Hook., *Musci Amer., S. States*: no. 170, 1841 (Wilson 1841; non vidi). Type: USA.

≡*Mastigolejeunea auriculata* (Wilson et Hook.) Steph., *Bot. Gaz.* 17(6): 171, 1892 (Stephani 1892).

=*Lejeunea versicolor* Mitt., *Bot. Voy. Herald (Fl. Isthmus Panama)*: 246, 1854 (Mitten 1854b), nom. inval. (ICN2018 Art. 38.1(a); no description), syn. in Spruce (1844). Type: USA.

=*Phragmicoma salvadorica* Ångstr., Öfvers. *Förh. Kongl. Svenska Vetensk.-Akad.* 33(7): 83, 1876 (Ångström 1876), syn. fide Geissler and Gradstein (1994). Lectotype (Geissler and Gradstein 1994: 206): "San Salvador, Honduras, Dr. Hjalmarsson, S" (S-B53950 https://herbarium.nrm.se/specimens/B53950).

=*Mastigolejeunea crispula* Steph., *Hedwigia* 27(3/4): 111, 1888 (Stephani 1888d), nom. inval. (ICN2018 Art. 35.1; genus not valid), syn. fide Gradstein and Inoue (1980). Type: Nigeria.

≡*Mastigolejeunea crispula* Steph. ex A.Evans, *Bull. Torrey Bot. Club* 34(11): 550, 1907 (Evans 1907b).

=*Mastigolejeunea pittieri* Steph., *Sp. Hepat.* 4: 766, 1912 (Stephani 1912b), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 77 as "holotype") or possibly holotype: Costa Rica, Boruca, 27 Feb 1891, *Pittier & Durand 6070* (G-00067066 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113289&lang=en).

=*Mastigolejeunea innovans* (Spruce) Steph. var. *parciflora* Herzog., *Rev. Bryol. Lichénol.* 20(1/2): 132, 1951 (Herzog 1951), syn. fide Gradstein (1994). Lectotype (Gradstein 1994: 77 as "holotype"): Honduras, Atlántida, Lancetilla Valley, near Tela, *Standley 55342 p.p.* (JE-04001656 https://je.jacq.org/JE04001656). Note: The specimen in Jena is marked as "var. *latistipula*," but it is almost certain that it was the base for Herzog's name (he may have changed the epithet before publishing it without indicating it on the specimen).

GUATEMALA. S. loc. (Bastos 2004 as *Mastigolejeunea auriculata*). ALTA VERAPAZ: Panzós municipio, Cahabón and/or Senahú, 2012, *Pérez & López-Medina*, det. M. Pérez (**Pérez and López-Medina 2012** as *Mastigolejeunea auriculata*); Santa María Cahabón municipio, Secanquim, *Maxon & Hay 3205* (US, **Gradstein 1994** as *Mastigolejeunea auriculata*; **Freire 2006** as *Mastigolejeunea auriculata*; **Pérez 2009** as *Mastigolejeunea auriculata*). EL PETÉN: Flores Municipio, Dos Lagunas, *Can et al.* (USCG, **Morales 2011** as *Mastigolejeunea auriculata*); Flores municipio, SW side of Laguna Yaxhá, Reserva Privada Yaxhá, 17°03.295′N, 89°23.236′W, 25 Jan 2006, *Quedensley 4226*, det. Dauphin Sep 2017 (MO, W-0089058! in packet of *Cheilolejeunea clausa*, **this publication**); San Andres municipio, Estación Biológica Las Guacamayas, Laguna del Tigre, *Can et al.* (USCG, **Morales 2011** as *Mastigolejeunea auriculata*); San José municipio, Cerro Cahuí, *Can et al.* (USCG, **Morales 2011** as *Mastigolejeunea auriculata*); San José municipio, El Zotz, *Can et al.* (USCG, **Morales 2011** as *Mastigolejeunea auriculata*).

BELIZE. S. loc. (**Fulford 1938** as *Mastigolejeunea auriculata*; Frye and Clark 1947 as *Mastigolejeunea auriculata*; Schuster 1980d as *Mastigolejeunea auriculata*; Fulford and Sharp 1990 as *Mastigolejeunea* '*auriculate*'; Whittemore and Allen 1996 as *Mastigolejeunea auriculata*; Bastos 2004 as *Mastigolejeunea auriculata*). TOLEDO: S. loc. (Whittemore and Allen 1996 as *Mastigolejeunea auriculata*); Wild Cane Cay, *Robertson* (NY, U, **Gradstein 1994** as *Mastigolejeunea auriculata*).

HONDURAS. S. loc. (Ångström **1876** as *Phragmicoma salvadorica*; Bastos 2004 as *Mastigolejeunea auriculata*). ATLÁNTIDA: Tela municipio, La Fragua, 20 m, *Standley 55751* (NY, **Herzog 1951** as *Mastigolejeunea auriculata*; **Gradstein 1994** as *Mastigolejeunea auriculata*); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55342 p.p.* (JE-04001656 https://je.jacq.org/JE04001656, **TYPE** of *Mastigolejeunea innovans* var. *parciflora*, **Herzog 1951** as *Mastigolejeunea innovans* var. *parciflora*; **Geissler and Bischler 1985** as *Mastigolejeunea innovans* var. *parciflora*). *COPÁN: Copán municipio, Copán ruins, 25 Jun 1992, *D'Arcy 18154*, det. Dauphin May 2017 (MO-5280470!, **this publication**).

EL SALVADOR. S. loc. (Ångström **1876** as *Phragmicoma salvadorica*; **Geissler and Bischler 1989** as *Phragmicoma salvadorica*). SAN SALVADOR: S. loc., *Hjalmarsson* (S-B53950 https://herbarium.nrm.se/specimens/B53950, **TYPE** of *Phragmicoma salvadorica*, **Geissler and Gradstein 1994** as *Phragmicoma salvadorica*).

NICARAGUA. S. loc. (Bastos 2004 as *Mastigolejeunea auriculata*). ATLÁNTICO SUR: El Rama municipio, El Recreo 15 W of Rama, *Danin 2-G* (MO, U, **Gradstein 1994** as *Mastigolejeunea auriculata*); Paiwas municipio, 4.3 km S of Wilikon along road to Rio Blanco, 13°03′13″N, 85°05′39″W, *Stevens & Montiel 30592*, det. Dauphin May 2017 (MO-6239580!, **this publication**).

COSTA RICA. S. loc. (Evans 1907b as *Mastigolejeunea crispula*; Robinson 1967 as *Mastigolejeunea pittieri*; Schuster 1980d as *Mastigolejeunea auriculata*; Fulford and Sharp 1990 as *Mastigolejeunea* '*auriculate*'; Bastos 2004 as *Mastigolejeunea auriculata*); S. loc., 1967, *Robinson* (**Morales 1991** as *Mastigolejeunea pittieri*). PUNTARENAS: S. loc. (**Gradstein 1994** as *Mastigolejeunea auriculata*); Buenos Aires cantón, Boruca (**Geissler and Bischler 1985** as *Mastigolejeunea pittieri*; **Tonduz 1895a** as *Mastigolejeunea crispula*; Dauphin 2005 as *Mastigolejeunea auriculata*); Buenos Aires cantón, Boruca, *Pittier 6070* (**Stephani 1893c** as *Mastigolejeunea crispula*; **Morales 1991** as *Mastigolejeunea crispula*); Buenos Aires cantón, Boruca, 27 Feb 1891, *Pittier & Durand 6070* (G-00067066 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=113289&lang=en, **TYPE** of *Mastigolejeunea pittieri*, **Stephani 1912b** as *Mastigolejeunea pittieri*); Osa cantón, Osa Peninsula, Rincón, Centro Boscosa, 150 m, Oct 1993, *Gradstein* (**Gradstein 1999b** as *Mastigolejeunea auriculata*).

PANAMA. S. loc. (**Mitten 1854b** as *Lejeunea versicolor*; Stotler et al. 1998 as *Mastigolejeunea auriculata*; Bastos 2004 as *Mastigolejeunea auriculata*); Canal Zone (Schäfer-Verwimp 2014 as *Mastigolejeunea auriculata*). CHIRIQUÍ: S. loc. (Schäfer-Verwimp 2014 as *Mastigolejeunea auriculata*); Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, 1,000–1,200 m, *Salazar Allen 709* (PMA, **Stotler et al. 1998** as *Mastigolejeunea auriculata*); Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953** as *Mastigolejeunea auriculata*; **Stotler et al. 1998** as *Mastigolejeunea auriculata*). COCLÉ: Antón distrito, El Valle de Antón, Golden Frog Inn and near surroundings, 8°36.6′N, 80°06.6′W, 640–650 m, 7 Apr 2006, *Schäfer-Verwimp & Verwimp 31061* (JE, **Schäfer-Verwimp 2014** as *Mastigolejeunea auriculata*). DARIÉN: S. loc. (Schäfer-Verwimp 2014 as *Mastigolejeunea auriculata*); Cerro Pirre (Stotler et al. 1998 as *Mastigolejeunea auriculata*); Cerro

Pirre, Trail El Real–Pirre, along Río Pirre, ~50 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992** as *Mastigolejeunea auriculata*); Pinogana distrito, ~20 km SSW of Boca de Cupé, 200–700 m, *Allen 8721*, *8722* (MO, **Stotler et al. 1998** as *Mastigolejeunea auriculata*); trail El Real to Pirre, *Salazar Allen & Gradstein 9216* (PMA, U, **Gradstein 1994** as *Mastigolejeunea auriculata*; **Stotler et al. 1998** as *Mastigolejeunea auriculata*). PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Gradstein & Salazar Allen 15096* (**Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, Basilisk Bay, 2003, *Dauphin 3160* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado Island, behind laboratory, *Salazar Allen & Chung 4725* (PMA, **Stotler et al. 1998** as *Mastigolejeunea auriculata*; **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Lathrop, 2003, *Dauphin 3096* (CR, PMA, **Dauphin et al. 2022**); La Chorrera distrito, Barro Colorado, Zetek, 2003, *Dauphin 3116* (CR, PMA, **Dauphin et al. 2022**). PANAMA: S. loc. (Schäfer-Verwimp 2014 as *Mastigolejeunea auriculata*); Panamá distrito, Summit Garden, *Salazar Allen & Gradstein 9497* (PMA, U, **Gradstein 1994** as *Mastigolejeunea auriculata*; **Stotler et al. 1998** as *Mastigolejeunea auriculata*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, Indian Subcontinent, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Triandrophyllum Fulford et Hatcher, *Bryologist* 64(4): 349, 1961 (Fulford and Hatcher 1961).

Triandrophyllum subtrifidum (Hook.f. et Taylor) Fulford et Hatcher, *Bryologist* 64(4): 350, 1961 (Fulford and Hatcher 1961) var. ***subtrifidum***.

≡*Jungermannia subtrifida* Hook.f. et Taylor, *London J. Bot.* 3: 579, 1844 (Hooker and Taylor 1844b). Type: Tasmania.

=*Isotachis ripensis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 339, 1885 (Spruce 1885), syn. fide Hässel and Solari (1975). Type: Ecuador.

GUATEMALA. S. loc. (Fulford and Hatcher 1961; Grolle 1969a, 1972d; Hässel and Solari 1975, 1985; Engel 1978, 1990; Schäfer-Verwimp and Vital 1989; Fulford and Sharp 1990; León et al. 1998; Váňa and Engel 2013). SAN MARCOS: 10 mi (16 km) S of San Marcos, en camino a San Rafael, 2,100 m, 13 Jul 1977, *Croat 41022*, det. Whittemore (USCG, MOBOT, **Freire 2006**); Sibinal municipio, Tacaná Volcán, *Steyermark 32451* (hb. Fulford, **Crandall 1969**); Sibinal municipio, Tacaná Volcán, *Steyermark 36008* (F, **Fulford 1963a; Freire 2006; Pérez 2009**); Sibinal municipio, Tacaná Volcán, *Steyermark 36451* (F, **Fulford 1963a; Freire 2006**).

COSTA RICA. S. loc. (Cole 1982, 1983; Fulford and Hatcher 1961; Hässel and Solari 1975, 1985; Schäfer-Verwimp and Vital 1989; Fulford and Sharp 1990; León et al. 1998; Gradstein 1999a; Dauphin 2005; Gradstein and Holz 2005; Váňa and Engel 2013); Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**). ALAJUELA: Poás Volcano, 31 Jul 1977, *Griffin & Araya 57*, det. Váňa (USJ, FLAS, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, 1924, *Standley 35279* (JE-04004922 https://je.jacq.org/JE04004922, US-00289478, **Fulford 1963a**). LIMÓN: Chirripó National Park, Laguna Roja, *Quesada 1255* (CR, **Dauphin 2005**). SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38361* (US, **Herzog 1938** as *Isotachis ripensis*; **Fulford 1963a; Morales 1991; Dauphin 2005**).

PANAMA. S. loc. (León et al. 1998; Gradstein 1999a; Váňa and Engel 2013). NASO TJËR DI COMARCA: Parque Internacional La Amistad, Cerro Fábrega, 3,150–3,353 m, *Dauphin 1582* (GOET, CR, PMA, U, **Stotler et al. 1998**; **Dauphin 2007**).

Also reported from Malesia, Australia, New Zealand, Mexico, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Triandrophyllum subtrifidum var. ***trifidum*** (Gottsche) Solari, *Bol. Soc. Argent. Bot.* 15(2/3): 201, 1973 (Solari 1973).

≡*Sendtnera trifida* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 142, 1864 (Gottsche 1864). Type: Colombia.

≡*Triandrophyllum trifidum* (Gottsche) Fulford et Hatcher, *Bryologist* 64(4): 348, 1961 (Fulford and Hatcher 1961).

=*Isotachis ripensis* Spruce var. *armata* Herzog, *Rev. Bryol. Lichénol.* 11(1/2): 38, 1939 (Herzog 1938), syn. fide Grolle (1964e). Lectotype (Grolle 1964e: 240): Costa Rica, Volcán de Turrialba, 2,000–2,400 m, on tree, 1924, *Standley 35279* (JE-04004922 https://je.jacq.org/JE04004922, isolectotype US-00289478 http://n2t.net/ark:/65665/3ed61fec0-b1ee-4e11-9dc2-448452c121a4).

?GUATEMALA. S. loc. (Gradstein et al. 1977). Note: We are not aware of any firsthand report from Guatemala.

COSTA RICA. S. loc. (Gradstein et al. 1977; Grolle 1969a as *Triandrophyllum trifidum*). CARTAGO: Turrialba cantón, Volcán Turrialba, S slope near the Finca, 2,000–2,400 m, 1924, *Standley 35279* (JE-04004922 https://je.jacq.org/JE04004922, US-00289478, **TYPE** of *Isotachis ripensis* var. *armata*, **Herzog 1938** as *Isotachis ripensis* var. *armata*; **Grolle 1964e** as *Triandrophyllum trifidum*; **Bonner 1966** as *Isotachis ripensis* var. *armata*; **Engel 1978**; **Morales 1991**; **Dauphin 2005** as *Triandrophyllum trifidum*).

Also reported from Western South America, Brazil, Southern South America.

Trichocolea Dumort., *Commentat. Bot. (Dumortier)*: 113, 1822 (Dumortier 1822).

Trichocolea filicaulis Steph., *Sp. Hepat. (Stephani)* 4: 59, 1909 (Stephani 1909a). Type: Guadeloupe, Dominica.

GUATEMALA. S. loc. (Fulford 1987; Schuster 2000c as *Trichocolea filicaulis* var. *filicaulis*; Schäfer-Verwimp and Pócs 2009; Katagiri 2013; Lavocat Bernard 2018). BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). QUICHÉ: Nebaj, *Sharp 2514* (TENN, **Fulford 1963a; Freire 2006; Pérez 2009**).

***NICARAGUA.** *GRANADA: Granada municipio, Volcán Mombacho, 10–1,222 m, 8 Jun 1981, *Heinrichs & Moreno 186*

p.p., det. Dauphin May 2017 (MO-6699906! http://tropicos.org/specimen/100988674, **this publication**).

COSTA RICA. S. loc. (Katagiri 2013; Lavocat Bernard 2018). ALAJUELA: San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Norris 110000* (UC, **Norris et al. 2017**); San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, *Norris 110081* (UC, **Norris et al. 2017**). PUNTARENAS: Coto Brus cantón, Santa María de Pittier, *Dauphin 1532* (CR, **Dauphin 2005**). SAN JOSÉ: Rancho Redondo, Cañon del Río Tiribí, *Stiles & Morales 2169*, det. Morales (**Morales 1991**); Vásquez de Coronado cantón, Rancho Redondo, Río Tiribí, 2,040–2,300 m, *Morales 2169* (**Dauphin 2005**).

PANAMA. COCLÉ: La Pintada distrito, Corregimiento El Copé, Parque Nacional G. D. Omar Torrijos H., Sendero La Rana Dorada, 8°40′06″N, 80°35′26″W, 696 m, 31 Jul 2017, *Dauphin & Gudiño 4446* (PMA, **Dauphin et al. 2015**).

Also reported from Papuasia, the Caribbean, Northern South America, Western South America, Southern South America.

Verdoornianthus Gradst., *Bryologist* 80(4): 607, 1977 (Gradstein 1977).

Verdoornianthus marsupiifolius (Spruce) Gradst., *Bryologist* 80(4): 609, 1977 (Gradstein 1977).

≡*Lejeunea marsupiifolia* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 118, 1884 (Spruce 1884). Type: Brazil.

GUATEMALA. ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Northern South America, Western South America, Brazil.

Xylolejeunea Xiao L.He et Grolle, *Ann. Bot. Fenn.* 38(1): 27, 2001 (He and Grolle 2001).

Xylolejeunea aquarius (Spruce) X.L.He et Grolle, *Ann. Bot. Fenn.* 38(1): 29, 2001 (He and Grolle 2001).

≡*Lejeunea aquarius* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 185, 1884 (Spruce 1884). Type: Venezuela.

≡*Trachylejeunea aquarius* (Spruce) A.Evans, *Bull. Torrey Bot. Club* 30(10): 561, 1903 (Evans 1903c).

GUATEMALA. BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Trachylejeunea* '*aquaris*').

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Xylolejeunea crenata (Nees et Mont.) Xiao L.He et Grolle, *Ann. Bot. Fenn.* 38(1): 36, 2001 (He and Grolle 2001).

≡*Lejeunea crenata* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 9: 48, 1838 (Montagne 1838). Type: French Guiana.

GUATEMALA. ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

COSTA RICA. S. loc. (Schäfer-Verwimp et al. 2013). HEREDIA: Sarapiquí cantón, La Selva Biological Station, LOC 2000, 40–100 m, 30 Dec 2002, *Kaczmarech 900*, det. Dauphin (CR, **Dauphin 2005**).

***PANAMA.** *BOCAS DEL TORO: Bocas del Toro distrito, Bastimentos, Salt Creek, Sendero a Long Beach, 9.29456°N, 82.10303°W, 70 m, 16 Aug 2017, *Dauphin 4635*, det. Dauphin Aug 2017 (PMA, **this publication**).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Zoopsidella R.M.Schust., *Nova Hedwigia* 10(1/2): 24, 1965 (Schuster 1965).

Zoopsidella antillana (Steph.) H.Rob., *Bol. Soc. Venez. Ci. Nat.* 32(132/133): 254, 1976 (Steyermark and Brewer-Carías 1976) subsp. *antillana*.

≡*Zoopsis antillana* Steph., *Bull. Herb. Boissier*, sér. 2, 8(4): 268 (=*Sp. Hepat. [Stephani]* 2: 282), 1908 (Stephani 1908f). Type: Dominica.

Note: We assume that all reports of *Zoopsidella antillana* from Central America belong to subsp. *antillana*.

COSTA RICA. S. loc. (Schäfer-Verwimp and Reiner-Drehwald 2009; Schäfer-Verwimp 2014). PUNTARENAS: Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, 400 m, *Dauphin 539* (**Gradstein et al. 1994**; **Dauphin 2005**); Osa cantón, Rincón, Boscosa trail to Cerro Chocuaco, 300–400 m, *Gradstein & Dauphin 9318* (U, USJ, **Dauphin 2005**).

PANAMA. COCLÉ: Antón distrito, El Valle de Antón, Cerro Gaital, along trail from Alto de La Mesa to summit region, 8°37.4–8′N, 80°06.9–7.0′W, 860–1,015 m, 25 Mar 2009, *Schäfer-Verwimp & Verwimp 34234/B*, *34235/A* (JE, **Schäfer-Verwimp 2014**). VERAGUAS: Isla Canales de Tierra, Sendero camino a Ensenada Guabo, 7°45′N, 81°35′W, Jan 2002, *Salazar Allen et al. 19990*, *20066* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero de Manglarito hacia Playa Limón, Jan 2002, *Salazar Allen et al. 20421* (PMA, **Salazar Allen and Chung 2003, 2006**); Soná distrito, Región de Bahía Honda, Sendero hacia Playa Limón, Jan 2002, *Salazar Allen et al. 20501* (PMA, **Salazar Allen and Chung 2003, 2006**).

COCOS I. S. loc. (Salazar Allen and Chung 2003; Schäfer-Verwimp and Reiner-Drehwald 2009; Schäfer-Verwimp 2014); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 21 Jan 1990, *Dauphin 960*, det. G. Dauphin Mar 2021 (USJ-47206!, CR-4468312!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 10 Mar 1990, *Dauphin A9/13*, det. G. Dauphin Mar 2021 (USJ-47205!, CR-4468313!, W!, **this publication**); Cerro Yglesias, 5°32′57″N, 87°03′56″W, 600 m, 15 Feb 1994, *Dauphin 960*, det. M. I. Morales (USJ, **Dauphin 1995, 1999, 2005**).

Also reported from the Caribbean, Northern South America, Brazil.

Zoopsidella integrifolia (Spruce) R.M.Schust., *Bull. Natl. Sci. Mus. Tokyo*, n.s., 12(3): 666, 1969 (Schuster 1969b).

≡*Cephalozia integrifolia* Spruce, *Cephalozia*: 29, 1882 (Spruce 1882). Type: Brazil.

PANAMA. *BOCAS DEL TORO: Bocas del Toro distrito, Dolphin Bay, 9°13′16.9″N, 82°13′03.0″W, 16 m, 15 Aug 2017, *Gudiño 3350*, det. Gudiño Aug 2017 (PMA, **this publication**). CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, SW of camping site, from Finca Pittí to foothills of Cerro Fortuna, 1,000–1,270 m (**Salazar Allen et al. 2021**); Gualaca distrito, Hornito, Fortuna, ~1,100 m, *Gradstein 9775a* (GOET, **Stotler et al. 1998**); Gualaca distrito, Hornito, Fortuna, 1,170 m, *Stotler & Crandall-Stotler 3487* (ABSH, PMA, **Stotler et al. 1998**). PANAMA WEST: La Chorrera distrito, Barro Colorado, Barbour Point, 2003, *Dauphin 3151* (CR, PMA, **Dauphin et al. 2022**).

Also reported from Northern South America, Western South America, Brazil.

Zoopsidella macella (Spruce) R.M.Schust., *Bull. Natl. Sci. Mus. Tokyo*, n.s., 12(3): 666, 1969 (Schuster 1969b).

≡*Cephalozia macella* Spruce, *Cephalozia*: 29, 1882 (Spruce 1882). Type: Brazil.

PANAMA. PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Barbour Point, 9°09′N, 79°51′W, 20–170 m, *Dauphin 3151* (PMA, **Dauphin et al. 2006**).

Also reported from Northern South America, Western South America, Brazil.

REPORTS NOT ABLE TO BE PLACED INTO ANY ACCEPTED TAXON

The reports below are those that we have not been able to place under any currently accepted name. Several of them are either invalidly published or subspecific taxa where the parent taxon is synonymized with something, but the subspecific taxon is not treated in any earlier publication and we do not know if they should follow the parent taxon.

ANTHOCEROTOPHYTA

Anthoceros L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753).

Anthoceros tetrandrus Steph. ex Bonner, *Index Hepat.* 2: 225, 1962 (Bonner 1962a), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Guatemala, Aug 1867, *G. Bernoulli 453*, ex hb. Schiffner (G-00048009 http://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=127527&lang=en).

Note: *Anthoceros tetrandrus* is a *nomen herbariorum* published without description by Bonner (1962a) from a specimen named in G, and it is unclear to us which species it belongs to.

GUATEMALA. S. loc., Aug 1867, *Bernouilli 453* (G, **TYPE, Bonner 1962a**).

Not found outside Central America.

MARCHANTIOPHYTA

Archilejeunea (Spruce) Steph., *Hedwigia* 27(3/4): 113, 1888 (Stephani 1888d).

Archilejeunea ovata Herzog, *Rev. Bryol. Lichénol.* 20(1/2): 130, 1951 (Herzog 1951). Type: Honduras, Atlántida, Lancetilla Valley, near Tela, 20–600 m, *Standley 55669 p.p.*

Note: *Archilejeunea ovata* is conspecific with *Lopholejeunea nigricans* or *Lopholejeunea subfusca* (Gradstein 1994). Type material has not been found in JE or any other herbarium searched (see also Gradstein 1994).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 55669 p.p.* (**TYPE, Herzog 1951; Bonner 1962a**).

Not found outside Central America.

Cheilolejeunea (Spruce) Steph., *Bot. Gaz.* 15(11): 284, 1890 (Stephani 1890d).

Cheilolejeunea condensata (Spruce) B.M.Thiers, *Nova Hedwigia* 42: 249, 1986 (Thiers 1986) nom. inval. (ICN2018 Art 33.4; basionym not cited).

≡*Lejeunea fragrantissima* var. *condensata* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 244, 1884 (Spruce 1884). Type: Peru.

≡*Euosmolejeunea condensata* (Spruce) Steph., *Hedwigia* 35(3): 95, 1896 (Stephani 1896).

Note: We do not know where to refer this invalid name, and we do not know of any firsthand report from Central America.

COSTA RICA. S. loc. (Bonner 1965 as *Euosmolejeunea condensata*; Stephani 1914 as *Euosmolejeunea condensata*).

Also reported from Western South America.

Frullania Raddi, *Jungermanniogr. Etrusca*: 9, 1818 (Raddi 1818b).

Frullania falciflora Herzog ex Bonner, *Index Hepat.* 5: 300, 1965 (Bonner 1965), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, San José, La Palma, 1,600 m, 17 Mar 1924, *Standley 38016* (US http://n2t.net/ark:/65665/3d665b1ea-bd5c-45cf-9f9b-6b13f028b426).

Note: *Frullania falciflora* was published without description by Bonner (1965). It is probably a *nomen herbariorum* possibly also present in G. It is unclear to us to which species it belongs.

COSTA RICA. SAN JOSÉ: Moravia cantón, La Palma, 1,600 m, 17 Mar 1924, *Standley 38016* (**Bonner 1965**).

Not found outside Central America.

Frullania vueltensis Herzog ex Bonner, *Index Hepat.* 5: 465, 1965 (Bonner 1965), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Prov. S. José, Cerro de las Vueltas, 2,700–3,000 m., 29 Dec 1925–1 Jan 1926, *Standley 43851* (G, also in S-B24325 https://herbarium.nrm.se/specimens/B24325).

Note: *Frullania vueltensis* is an herbarium name mentioned by Bonner (1965) without description. We do not know where to refer it.

COSTA RICA. SAN JOSÉ: Dota cantón, Cerro de Las Vueltas, 2,700–3,000 m, 29 Dec 1925–1 Jan 1926, *Standley 43851* (G, **Bonner 1965**).

Not found outside Central America.

Madotheca Dumort., *Commentat. Bot. (Dumortier)*: 111, 1822 (Dumortier (1822), nom. illeg. (ICN2018 Art. 52.1; earlier name included, cf. *Porella*).

Note: *Madotheca* is now a synonym of *Porella*, but one name has not yet been transferred.

Madotheca costaricensis Gottsche ex Pol., *J. Bot.* 15: 226, 1877 (Polakowsky 1877), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Costa Rica, Alajuela, Jun 1875, *Polakowsky 120B*.

Note: *Madotheca costaricensis* is an invalid name that has not been synonymized or validated under any name. We do not know where to place it, and we have not found any original material.

COSTA RICA. ALAJUELA: S. loc., Jun 1875, *Polakowsky 120b* (**Polakowsky 1877, 1879; Geissler and Bischler 1985**).

Not found outside Central America.

Mastigolejeunea Steph., *Hedwigia* 30(5): 206, 1891 (Stephani 1891a).

Mastigolejeunea lobulata Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras Lancetilla Valley, *Standley s.n.*

Note: No specimen corresponding to the report of *Mastigolejeunea lobulata* has been found. It may have been described by Herzog under another name, but as no collection number is mentioned, the only way its identity can be known is if a specimen with the name on the label is found in any herbarium (preferably US or JE).

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931; Geissler and Bischler 1985**).

Not found outside Central America.

Nardia Gray, *Nat. Arr. Brit. Pl.* 1: 694, 1821 (Gray 1821).

Nardia guatemalensis M.E. Pérez, *Brenesia* 71–72: 8, 2009 (Pérez 2009), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Guatemala, Volcán de Fuego (NY-636523 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=360786).

Note: *Nardia guatemalensis* was mentioned as a specimen in NY, but this specimen cannot be found now in spite of it being barcoded (L. Briscoe, New York Botanical Garden, personal communication, 2023).

GUATEMALA. SACATEPÉQUEZ: Volcán de Fuego (NY-636523 http://sweetgum.nybg.org/science/vh/specimen-details/?irn=360786, Pérez 2009; **Söderström et al. 2012a**).

Not found outside Central America.

Plagiochila (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

Plagiochila angulifolia Steph., *Spec. Hepat. [Stephani]* 6: 122, 1917 (Stephani 1917b), nom. illeg. (ICN2018 Art. 53.1; hom. illeg. [non Steph. 1905]). Type: Costa Rica, *Arséne*.

Note: *Plagiochila angulifolia* is only known from the original material. No material corresponding to this record exists in G (M. Price, Conservatoire et Jardin Botaniques, Genève, personal communication). It is likely that the description is an error by Stephani, and either the collector should be Breuer (and then this is the same taxon as described by Stephani in 1905e; =*Plagiochila adianthoides*), or if it was actually collected by Arséne, it must have been in Mexico because Arséne did not collect in Costa Rica.

COSTA RICA. S. loc., *Arséne* (**Stephani 1917b**).

Not found outside Central America.

Ptychocoleus Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3 Cl. Sci. Mat.* 4(13): 404, 1877 (Trevisan 1877).

Note: Ptychocoleus is now *Frullanoides*.

Ptychocoleus subfalcatus Herzog ex Standl., *Field Mus. Nat. Hist., Bot. Ser.* 10: 62, 1931 (Standley 1931), nom. inval. (ICN2018 Art. 38.1(a); no description). Original material: Honduras: Atlántida: Lancetilla Valley, *Standley*.

Note: We do not know where to refer the invalidly described *Ptychocoleus subfalcatus*. It seems to be known only from the original collection, which nobody seems to have studied later. According to Gradstein (1975), the original material is lost ("nowhere available").

HONDURAS. ATLÁNTIDA: Tela municipio, Lancetilla Valley, *Standley* (**Standley 1931; Geissler and Bischler 1989**).

Not found outside Central America.

TAXA REPORTED BUT NOT CONFIRMED TO OCCUR IN CENTRAL AMERICA

ANTHOCEROTOPHYTA

Anthoceros L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753).

Anthoceros venosus Lindenb. et Gottsche, *Syn. Hepat.* 4: 584, 1846 (Gottsche et al. 1846). Type: Mexico.

Note: We are not aware of any positively identified specimen from Central America.

?COSTA RICA. ?CARTAGO: Paraíso cantón, Tapanti National Park, 1,615 m, *Salazar Allen et al. 20654* (PMA, Villarreal

et al. 2015, 2017, both as *Anthoceros* cf. *venosus*; Cargill et al. 2022 as *Anthoceros* cf. *venosus*).

Also reported from Mexico, Western South America, Brazil, Southern South America.

Phaeoceros Prosk., *Bull. Torrey Bot. Club* 78(4): 346, 1951 (Proskauer 1951b).

Phaeoceros laevis (L.) Prosk., *Bull. Torrey Bot. Club* 78(4): 347, 1951 (Proskauer 1951a).

≡*Anthoceros laevis* L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753). Type: Italy.

Note: *Phaeoceros laevis* has been reported from all continents, but global distribution is unclear due to frequent confusion with *Phaeoceros carolinianus*. No dioicious specimen has been seen from the tropics (J. C. Villarreal, unpubl.).

?GUATEMALA. S. loc. (Freire et al. 2012).

?COSTA RICA. ?ALAJUELA: San Ramón, 3 Nov 2010, *Norris 111204* (**Norris et al. 2017** as *Anthoceros laevis*).

?PANAMA. ?CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, NE of camping site, 900–1,200 m, *Salazar Allen 609*, det. Steere Oct 1980 (**Salazar Allen et al. 2021**).

Also reported from Northern Europe, Middle Europe(?), Southwestern Europe, Southeastern Europe, Eastern Europe(?), North Africa, Macaronesia, West Tropical Africa?, Middle Atlantic Ocean(?), Russian Far East(?), Caucasus, Western Asia, China(?), Eastern Asia(?), Indian Subcontinent(?), Indo-China(?), Malesia(?), Papuasia(?), Australia(?), Southwestern Pacific(?), Southeastern Pacific(?), Northwestern Pacific(?), Northeastern Pacific(?), Mexico(?), the Caribbean(?), Northern South America(?), Western South America(?), Brazil(?), Southern South America(?), Subantarctic Islands(?).

Phaeoceros mohrii (Austin) Hässel, *Candollea* 44(2): 721, 1989 (Hässel 1989).

≡*Anthoceros mohrii* Austin, *Bull. Torrey Bot. Club* 6(52): 304, 1879 (Austin 1879). Type: USA.

Note: We are not aware of any positively identified specimen from Central America. The taxon itself may be conspecific with *Phaeoceros microsporus* (Schuster 1992c).

?PANAMA. ?CHIRIQUÍ: Tierras Altas distrito, Parque Internacional La Amistad, along trail to Cerro Punta, 2,462 m, *Stotler & Crandall-Stotler 3497* (ABSH, PMA, Stotler et al. 1998 as *Phaeoceros* cf. *mohrii*).

Also reported from Southwestern USA, Southeastern USA.

MARCHANTIOPHYTA

Archilejeunea (Spruce) Steph., *Hedwigia* 27(3/4): 113, 1888 (Stephani 1888d).

Archilejeunea ludoviciana subsp. ***porelloides*** (Spruce) Gradst., *Fl. Neotrop. Monogr.* 62: 58, 1994 (Gradstein 1994).

≡*Lejeunea porelloides* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 90, 1884 (Spruce 1884). Type: Venezuela.

≡*Archilejeunea porelloides* (Spruce) Schiffn., *Hedwigia* 33(4): 181, 1894 (Schiffner 1894).

Note: We are not aware of any firsthand report from Central America.

?HONDURAS. S. loc. (Fulford 1942b as *Archilejeunea porelloides*).

?COSTA RICA. S. loc. (Costa et al. 2020).

Also reported from Northern South America, Western South America, Brazil.

Calypogeia Raddi, *Jungermanniogr. Etrusca*: 31, 1818 (Raddi 1818b).

Calypogeia tenax (Spruce) Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 664 [=*Sp. Hepat. (Stephani)* 3: 396], 1908 (Stephani 1908g).

≡*Kantius tenax* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 416, 1885 (Spruce 1885). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Calypogeia* aff. *tenax*).

Also reported from Northern South America, Western South America, Brazil.

Cheilolejeunea (Spruce) Steph., *Bot. Gaz.* 15(11): 284, 1890 (Stephani 1890d).

Cheilolejeunea fragrantissima (Spruce) R.M.Schust., *Phytologia* 45(5): 431, 1980 (Schuster 1980b).

≡*Lejeunea fragrantissima* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 243, 1884 (Spruce 1884). Type: Brazil, Venezuela, Ecuador.

Note: We are not aware of any positively identified specimen from Central America.

?COSTA RICA. ?GUANACASTE: La Cruz cantón, Guanacaste National Park, Cerros Santa Elena, 10°53′24″N, 85°50′55″W, 650–700 m, 27 Aug 2003, *Dauphin et al. 3356* (CR, Dauphin and Grayum 2005 as *Cheilolejeunea* cf. *fragrantissima*).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Cololejeunea (Spruce) Steph., *Hedwigia* 30(5): 208, 1891 (Stephani 1891a).

Cololejeunea lanciloba Steph., *Hedwigia* 34(5): 250, 1895 (Stephani 1895c). Type: Nicobar Is.

=*Cololejeunea tonkinensis* Steph., *Hedwigia* 34(5): 252, 1895 (Stephani 1895c), syn. fide Zhu and So (2001). Type: Vietnam.

Note: We are not aware of any positively identified specimen from Central America. Gradstein (2021) considered the species a synonym of the pantropic *C. planissima*.

?GUATEMALA. ?ALTA VERAPAZ: S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Cololejeunea* cf. *tonkinensis*).

Also reported from West Tropical Africa, West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Northeastern Pacific(?), the Caribbean, Northern South America(?), Western South America, Brazil.

Crossocalyx Meyl., *Bull. Soc. Vaud. Sci. Nat.* 60(249): 266, 1939 (Meylan 1939).

Crossocalyx hellerianus (Nees ex Lindenb.) Meyl., *Bull. Soc. Vaud. Sci. Nat.* 60(249): 266, 1939 (Meylan 1939).

≡*Jungermannia helleriana* Nees ex Lindenb., *Syn. Hepat. Eur.*: 64, 1829 (Lindenberg 1829). Type: Germany.

≡*Anastrophyllum hellerianum* (Nees ex Lindenb.) R.M.Schust., *Amer. Midl. Naturalist* 42(3): 575, 1949 (Schuster 1949).

Note: We are not aware of any firsthand report from Central America.

?GUATEMALA. S. loc. (Gradstein et al. 2001b as *Anastrophyllum hellerianum*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Siberia, Russian Far East, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southeastern USA, Mexico.

Diplasiolejeunea (Spruce) Schiffn., *Hepat. (Engl.-Prantl)*: 121, 1893 (Schiffner 1893a).

Diplasiolejeunea buckii Grolle, *Beitr. Phytotax.* 15: 105, 1992 (Grolle 1992). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Diplasiolejeunea* cf. *buckii*).

Also reported from Western South America, Brazil.

Frullania Raddi, *Jungermanniogr. Etrusca*: 9, 1818 (Raddi 1818b).

Frullania gaudichaudii (Nees et Mont.) Nees et Mont., *Syn. Hepat.* 3: 435, 1845 (Gottsche et al. 1845a) var. ***gaudichaudii***.

≡*Jubula gaudichaudii* Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 64, 1836 (Nees and Montagne 1836). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Frullania* cf. *gaudichaudii*).

Also reported from Southern Africa(?), Western Indian Ocean(?), China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia(?), New Zealand(?), Southwestern Pacific, Northwestern Pacific, Northern South America, Brazil.

Frullania griffithsiana Gottsche, *Syn. Hepat.* 4: 466, 1846 (Gottsche et al. 1846). Type: In America meridionali (a cl. Griffthia communicata adest in hb. Gourlieano).

Note: The type of *Frullania griffithsiana* was indicated to come from Central America. However, no other specimens are known outside SE Brazil except for a recent report from Peru. We are thus not convinced that the original locality is within the current delimitation of Central America.

?CENTRAL AMERICA. S. loc. (Gottsche et al. 1844).

Also reported from Western South America, Brazil.

Frullania rio-janeirensis var. ***megalostipa*** (Spruce) Gradst., *Mem. New York Bot. Gard.* 121: 379, 2021 (Gradstein 2021).

≡*Frullania megalostipa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 15, 1884 (Spruce 1884). Type: Ecuador.

Note: We are not aware of any firsthand report from Central America.

?PANAMA. S. loc. (Bonner 1965 as *Frullania megalostipa*).

Also reported from Northern South America, Western South America.

Frullania vitalii Yuzawa et S.Hatt., *J. Jap. Bot.* 63(1): 30, 1988 (Yuzawa and Hattori 1988). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (Freire et al. 2005 as *Frullania* cf. *vitalii*).

Also reported from Brazil.

Gongylanthus Nees, *Naturgesch. Eur. Leberm.* 2: 405, 1836 (Nees 1836).

Gongylanthus granatensis (Gottsche) Steph., *Bull. Herb. Boissier*, sér. 2, 6(5): 385 (=*Spec. Hepat. [Stephani]* 3: 41), 1906 (Stephani 1906b).

≡*Lindigina granatensis* Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5 1: 138, 1864 (Gottsche 1864). Type: Colombia.

Note: We are not aware of any firsthand report from Central America.

?COSTA RICA. S. loc. (Gradstein and Uribe 2016; Gradstein 2021). ?ALAJUELA: S. loc. (Váňa et al. 2012a).

Also reported from Western South America.

Gymnocoleopsis R.M.Schust., *Phytologia* 39(4): 243, 1978 (Schuster 1978a).

Gymnocoleopsis cylindriformis (Mitt.) R.M.Schust., *J. Hattori Bot. Lab.* 78: 126, 1995 (Schuster 1995b).

≡*Jungermannia cylindriformis* Mitt., *J. Linn. Soc., Bot.* 15(84): 196, 1876 (Mitten 1877b).

Note: We are not aware of any positively identified specimen from Central America. This was reidentified as *Gymnocoleopsis* cf. *cylindriformis* by S. R. Gradstein, G. Dauphin, and A.Sierra in Feb 2023.

?COSTA RICA. ?PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Estación Pittier, *Dauphin 1421* (Dauphin 2005 as *Cylindrocolea* cf. *planifolia*).

Also reported from West-Central Tropical Africa, East Tropical Africa, Mexico, Northern South America, Western South America, Southern South America, Subantarctic Islands.

Lejeunea Lib., *Ann. Gen. Sci. Phys.* 6: 373, 1820 (Libert 1820).

Lejeunea acanthogona var. ***diversicuspis*** (Spruce) Gradst. et C.J.Bastos, *Phytotaxa* 453(2): 61, 2020 (Bastos and Gradstein 2020a).

≡*Lejeunea diversicuspis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15(1): 176, 1884 (Spruce 1884). Type: Brazil.

=*Lejeunea erostrata* M.E.Reiner et Goda, *J. Hattori Bot. Lab.* 89: 25, 2000 (Reiner-Drehwald and Goda 2000), syn. fide Reiner-Drehwald et al. (2018). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Lejeunea* aff. *erostrata*).

Also reported from the Caribbean, Northern South America, Western South America(?), Brazil, Southern South America.

Lejeunea concava Lindenb. et Gottsche, *Syn. Hepat.* 5: 759, 1847 (Gottsche et al. 1847). Type: Mexico.

≡*Rectolejeunea concava* (Lindenb. et Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 683, 1914 (Stephani 1914).

Note: We are not aware of any firsthand report from Central America.

?COSTA RICA. S. loc. (Stephani 1914 as *Rectolejeunea concava*; Fulford and Sharp 1990 as *Rectolejeunea concava*).

Also reported from Mexico.

Lejeunea elongella Gottsche, *Ann. Sci. Nat. Bot.*, sér. 5, 1: 161, 1864 (Gottsche 1864). Type: Colombia.

≡*Hygrolejeunea elongella* (Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 535, 1914 (Stephani 1914).

Note: We are not aware of any firsthand report from Central America.

?COSTA RICA. S. loc. (Stephani 1914 as *Hygrolejeunea elongella*; Bonner 1966 as *Hygrolejeunea elongella*).

Also reported from Western South America.

Lejeunea laevicalyx Gottsche, *Mexik. Leberm.*: 221, 1863 (Gottsche 1863). Type: Mexico.

≡*Taxilejeunea laevicalyx* (Gottsche) Steph., *Sp. Hepat. (Stephani)* 5: 469, 1917 (Stephani 1914).

Note: We are not aware of any firsthand report from Central America.

?GUATEMALA. S. loc. (Stephani 1914 as *Taxilejeunea laevicalyx*; Fulford and Sharp 1990 as *Taxilejeunea laevicalyx*).

Also reported from Mexico, Western South America.

Lejeunea oerstediana Lindenb. et Hampe, *Linnaea* 24(6): 641, 1852 (Hampe 1851a). Type: Jamaica.

Note: This taxon has not been reported from Central America for more than 150 years, and we question the original identification.

?PANAMA. S. loc. (**Mitten 1854b**; Stotler et al. 1998).

Also reported from the Caribbean.

Lejeunea sordida (Nees) Nees, *Naturgesch. Eur. Leberm.* 3: 278, 1838 (Nees 1838b).

≡*Jungermannia sordida* Nees, *Enum. Pl. Crypt. Javae*: 41, 1830 (Nees 1830). Type: Java.

Note: This is a mainly Asiatic taxon with no other reports from South America after 1835. The report from Panama is also only tentatively assigned to this species.

?PANAMA. ?PANAMA WEST: Barro Colorado Island, *Gradstein & Salazar Allen 15111*, *15135*; Balboa trail, *Salazar Allen & Chung 4338*, *Salazar Allen et al. 6048* (all reported by Dauphin et al. 2022 as *Lejeunea* cf. *sordida*).

Also reported from the Western Indian Ocean, China, Eastern Asia, Indian Subcontinent, Inco-China, Malesia, Papuasia, Australia, Southwestern Pacific, Northwestern Pacific.

Marchantia L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753).

Marchantia quadrata Scop., *Fl. Carniol. (ed. 2)* 2: 355, 1772 (Scopoli 1772). Type: Slovenia.

≡*Preissia quadrata* (Scop.) Nees, *Naturgesch. Eur. Leberm.* 4: 135, 1838 (Nees 1838a).

Note: Reports of *Marchantia quadrata* from tropical and subtropical areas are all rejected, mostly as *Marchantia chenopoda*.

?PANAMA. ?CHIRIQUÍ: Boquete, 2 Sep 1940, *Svihla 40-447* (**Svihla 1942** as *Preissia quadrata*; **Stotler et al. 1998** as *Preissia quadrata*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Australia, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Southern South America(?).

Metzgeria Raddi, *Jungermanniogr. Etrusca*: 34, 1818 (Raddi 1818b).

Metzgeria bahiensis Schiffn., *Österr. Bot. Z.* 61(7/8): 262, 1911 (Schiffner 1911). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. S. loc., 2007, *Pérez*, det. Pérez (USCG, Barillas de Klee et al. 2008 as *Metzgeria* cf. *bahiensis*). ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Metzgeria* cf. *bahiensis*).

Also reported from Brazil.

Metzgeria epiphylla A.Evans, *Proc. Amer. Acad. Arts* 58(7): 303, 1923 (Evans 1923a). Type: Chile.

Note: This is a southern temperate species, and its presence in the tropics must be questioned. According to Costa (2008), this must be a synonym of *Metzgeria ciliata*, but she did not examine the type.

?EL SALVADOR. S. loc. (Kuwahara 1986). ?SANTA ANA: Metapán municipio, SE-hang des Cerro Miramundo bei der Hazienda Montecristo, *Winkler A/1/1*, *A/16/5*, *A/18/a*, *etc.* (**Winkler 1967**).

Also reported from Southern South America, Subantarctic Islands.

Metzgeria hegewaldii Kuwah., *Nova Hedwigia* 34: 784, 1981 (Kuwahara 1981). Type: Peru.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Metzgeria* cf. *hegewaldii*).

Also reported from Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Metzgeria subaneura Schiffn., Österr. *Akad. Wiss., Math.-Naturwiss. Kl., Denkschr.* 111: 22, 1964 (Schiffner and Arnell 1964). Type: Brazil.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?ALTA VERAPAZ: Tucurú municipio, Reserva Privada Chelemhá (Pérez 2006 as *Metzgeria* cf. *subaneura*).

Also reported from Brazil.

Mnioloma Herzog, *Ann. Bryol.* 3: 115, 1930 (Herzog 1930).

Mnioloma elliottii (Steph.) R.M.Schust., *Fragm. Florist. Geobot.* 40(2): 841, 1995 (Schuster 1995a).

≡*Calypogeia elliottii* Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 663 [=*Sp. Hepat. (Stephani)* 3: 395], 1908 (Stephani 1908g). Type: Dominica.

Note: We are not aware of any positively identified specimen from Central America.

?GUATEMALA. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, Ramírez 2007 as *Calypogeia* aff. *elliottii*).

Also reported from the Caribbean.

Odontoschisma (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

Odontoschisma denudatum (Mart.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835) subsp. *denudatum*.

≡*Jungermannia scalaris* var. *denudata* Nees, in Mart., *Fl. crypt. erlang.*: 183, 1817 (Martius 1817). Type: Germany.

=*Odontoschisma cordifolium* Steph., *Sp. Hepat. (Stephani)* 6: 445, 1924 (Stephani 1924), syn. fide Gradstein and Ilkiu-Borges (2015). Type: Mexico.

Note: *Odontoschisma denudatum* is widely distributed in temperate areas of the Northern Hemisphere. The species is very rare in tropical America, where it has been found in Mexico, Cuba, and the northern Andes (Gradstein and Ilkiu-Borges 2015). Gradstein and Ilkiu-Borges did not cite the species from Central America, and according to them, most tropical records belong to *Odontoschisma variabile*.

?GUATEMALA. S. loc. (Fulford 1987; Fulford and Sharp 1990; Schuster 2002). ?ALTA VERAPAZ: S. loc., *Pérez 219* (USCG, Pérez 2009); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). ?BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**). ?IZABAL: Near Lago Izabal, 400–500 m, *Jones & Facey 3306* (NY, **Fulford 1968**; **Freire 2006**; **Pérez 2009**); near Lago Izabal, 400–500 m, *Jones & Facey 3308 p.p.* (NY, **Fulford 1968**; **Freire 2006**).

?BELIZE. S. loc. (Fulford 1987; Fulford and Sharp 1990; Schuster 2002). ?CAYO: S. loc. (Whittemore and Allen 1996). ?STANN CREEK: Sarawee Pine Ridge, *Gentle 2697* (MICH, **Fulford 1968**). ?TOLEDO: S. loc., Dec 1993, *Allen 15349* (BRH, MO, **Whittemore and Allen 1996**).

?COSTA RICA. Cordillera de Talamanca, *Kappelle 3568* (U, **Kappelle 1996**). ?ALAJUELA: Poás National Park, *Griffin et al. D 153* (**Dauphin 2005** as *Odontoschisma cordifolium*); Poás National Park, 10°12′N, 84°14′W, Aug 1973, *Griffin et al.* (**Griffin et al. 1974** as *Odontoschisma cordifolium*); Poás Volcano, Jul 1977, *Griffin & Araya 41* (FLAS, **Gradstein and** Váňa **1987**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, 30 Jul 1977, *Griffin & Araya 19* (FLAS, **Morales and Griffin 1983**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, 30 Jul 1977, *Griffin & Araya 6* (FLAS, PRC, **Morales and Griffin 1983**; **Gradstein and** Váňa **1987**; **Morales 1991**; **Dauphin 2005**); Poás Volcano, Aug 1977, *Griffin et al. 153* (USJ, FLAS-020511, **Morales and Griffin 1983** as *Odontoschisma cordifolium*; **Morales 1991** as *Odontoschisma cordifolium*).

?PANAMA. ?COCLÉ: Antón distrito, El Valle de Antón, Alto de La Mesa, 8°38.3′N, 82°07.6′W, 850–870 m, 3 Apr 2009,

Schäfer-Verwimp & Verwimp 34741 (JE, **Schäfer-Verwimp 2014**). ?DARIÉN: Cerro Pirre (Stotler et al. 1998); Cerro Pirre, above Rancho Mojado, 800–1,100 m, 4–8 Jun 1991, *Gradstein & Salazar Allen* (PMA, U, **Gradstein and Salazar Allen 1992**); S. loc. (Schäfer-Verwimp 2014).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Western Indian Ocean, Russian Far East, Caucasus, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Western Canada, Eastern Canada, North-Central USA, Northeastern USA, Southeastern USA, Mexico, the Caribbean, Western South America.

Odontoschisma portoricense (Hampe et Gottsche) Steph., *Hedwigia* 27(11/12): 296, 1888 (Stephani 1888a).

≡*Sphagnoecetis portoricensis* Hampe et Gottsche, *Linnaea* 25(3): 343, 1853 (Hampe and Gottsche 1852). Type: Puerto Rico.

Note: We are not aware of any firsthand report from Central America.

?PANAMA. S. loc. (Gradstein and Ilkiu-Borges 2009).

Also reported from the Caribbean, Northern South America, Western South America, Brazil.

Plagiochila (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

Plagiochila bunburii Taylor, *London J. Bot. 5*: 269, 1846 (Taylor 1846b). Type: Brazil.

=*Plagiochila parvistipula* Lindenb., *Syn. Hepat. 5*: 643, 1847 (Gottsche et al. 1847), syn. fide Stephani (1905a). Type: Central America, "in America meridionali, (leg. *Chamisso*, *Hb. Ac. Petr.*)."

Note: This species is only reported from "Central America," but it is not confirmed within the current limitation of Central America and probably originates from somewhere in the Caribbean.

?CENTRAL AMERICA. S. loc. (Gottsche et al. 1847 as *Plagiochila parvistipula*).

Also reported from the Caribbean, Brazil.

Plagiochila caduciloba H.L.Blomq., *Bryologist* 42(5): 114, 1939 (Blomquist 1939). Type: USA.

Note: The report is a remarkable range extension, and the identification should be checked. It is otherwise only known from the Appalachian Mountains.

?COSTA RICA. ?ALAJUELA: San Ramón cantón, Nectandra Cloud Forest Reserve, Quebrada Verde, *Risk 17178* (UC-2053751, **Norris et al. 2017**).

Also reported from Southeastern USA.

Plagiochila cuneata Lindenb. et Gottsche, *Syn. Hepat. 5*: 632, 1847 (Gottsche et al. 1847). Type: Mexico.

Note: Reports of *Plagiochila cuneata* belong to var. *bicuspidata* (=*Plagiochila bicuspidata*) or *Plagiochila cuneata* s. lat. We are not aware of any report of *Plagiochila cuneata* s. str. from Central America.

?COSTA RICA. ?ALAJUELA: Alajuela cantón, Fraijanes, 1,500–1,700 m, *Standley 47469* (**Dauphin 2005**). ?CARTAGO: La Estrella, *Standley 39174* (**Carl 1931b**; **Dauphin 2005**). ?PUNTARENAS: Buenos Aires, Río de Volcán, *Pittier 6067* (**Morales 1991**; **Dauphin 2005**); Monteverde (Morales 1991). ?SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38379* (**Dauphin 2005**).

Also reported from Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America.

Plagiochila tambillensis Loitl., *Diagn. pl. nov.*: 22, 1894 (Loitlesberger 1894). Type: Peru.

Note: We are not aware of any firsthand report from Central America.

?COSTA RICA. S. loc. (Fulford and Sharp 1990).

Also reported from Mexico, Western South America.

Plagiochila undata subsp. ***crispata*** (Gottsche) R.M.Schust., *Amer. Midl. Naturalist* 63(1): 122, 1960 (Schuster 1960).

≡*Plagiochila crispata* Gottsche, *Mexik. Leverm.*: 71, 1863 (Gottsche 1863). Type: Mexico.

Note: We are not aware of any firsthand report from Central America.

?PANAMA. S. loc. (Schuster 1980d; Stotler et al. 1998).

Also reported from Mexico, the Caribbean.

Plagiochila viminea Spruce, *Mem. Torrey Bot. Club* 1(3): 134, 1890 (Spruce 1890). Type: Bolivia.

Note: *Plagiochila viminea* is known only from the Bolivian type and the report from Costa Rica. The identity of the Costa Rican specimen remains to be verified.

?COSTA RICA. S. loc., *Motelay* (G, **Stephani 1905c**).

Also reported from Western South America.

Protocephalozia (Spruce) K.I.Goebel., *Flora* 77(2): 83, 1893 (Goebel 1893a).

Protocephalozia ephemeroides (Spruce) K.I.Goebel, *Flora* 77(2): 83, 1893 (Goebel 1893a).

≡*Cephalozia ephemeroides* Spruce, *Cephalozia*: 24, 1882 (Spruce 1882). Type: Brazil.

Note: This species is frequently misidentified and referred to sterile green algae or moss protonema (Gradstein, pers. comm.). All specimens except the types should be reidentified.

?GUATEMALA. ?IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**). ?ZACAPA: Río Hondo, Caserío Morán, Sierra de Las Minas, 15°09′25″N, 89°29′08″W, 1,500 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

Also reported from Northern South America, Western South America, Brazil.

Radula Dumort., *Commentat. Bot. (Dumortier)*: 112, 1822 (Dumortier 1822).

Radula carringtonii J.B.Jack, *Flora* 64: 385, 1881 (Jack 1881).

Type: Ireland.

Note: Patiño et al. (2013) doubted the identifications of *Radula carringtonii* from the Neotropics.

?COSTA RICA. S. loc. (Arts and Yamada 1998; Paton 1999; Yamada 2000; Holz et al. 2001; Dauphin 2005; Patiño et al. 2013). ?HEREDIA: Barva cantón, road from Montane to the Volcán Barva National Park, 2,000 m, 1985, *Eggers CR 1/133* (NICH, **Yamada 1995**).

Also reported from Northern Europe, Macaronesia, Western South America(?).

Riccardia Gray, *Nat. Arr. Brit. Pl.* 1: 679, 1821 (Gray 1821).

Riccardia latifrons (Lindb.) Lindb., *Acta Soc. Sci. Fenn.* 10: 513, 1875 (Lindberg 1875).

≡*Aneura latifrons* Lindb., *Bot. Not.* 26: 62, 1873 (Anonymous 1873). Lectotype: Finland.

Note: All reports of *Riccardia latifrons* from the Neotropical area should be treated as doubtful until the identity has been verified. Stotler et al. (1998) also considered them doubtful. It is possible that they represents *Riccardia parasitans* (Steph.) Meenks et de Jong, which was recently treated as a subspecies of *Riccardia latifrons* (Gradstein and Reeb 2018).

?PANAMA. S. loc. (Schäfer-Verwimp et al. 2013; Gradstein and Reeb 2018). ?CHIRIQUÍ: Tierras Altas distrito, Volcán, 9 Aug 1950, *Chickering* (MICH, **Crum and Arzeni 1953**; Stotler et al. 1998).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent(?), Indo-China(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA(?), Southeastern USA, the Caribbean(?), Northern South America(?), Western South America(?), Southern South America(?).

Riccardia multifida (L.) Gray, *Nat. Arr. Brit. Pl.* 1: 684, 1821 (Gray 1821).

≡*Jungermannia multifida* L., *Sp. Pl.* 1: 1136, 1753 (Linnaeus 1753). Type: Britain.

Note: Reports of *Riccardia multifida* from outside boreal areas need verification.

?COSTA RICA. S. loc. (Cole 1984; Davison 1993). ?ALAJUELA: San Ramón cantón, Nectandra Cloud Forest, Quebrada Verde, 2007, *Norris 110294* (UC-2053224, **Norris et al. 2017**). ?PUNTARENAS: Monteverde (Morales 1991); Monteverde, 4,300 ft (1,310 m), Feb 1969, *James, W. 1969-03* (R, **Reed and Robinson 1971**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Southern Africa, Western Indian Ocean, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia(?), New Zealand, Southwestern Pacific(?), Southeastern Pacific(?), Northwestern Pacific(?), Northeastern Pacific(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America(?), Western South America, Brazil, Southern South America.

Riccia L., *Sp. Pl.* 1: 1138, 1753 (Linnaeus 1753).

Riccia fluitans L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753). Type: Sweden.

Note: Bischler-Causse et al. (2005) questioned the identification of specimens of *Riccia fluitans* from Latin America, but the *Riccia fluitans* complex also includes, and may be conspecific with, *Riccia oerstediana*.

?COSTA RICA. S. loc. (Haynes et al. 1923, including *Riccia canaliculata*; Cole 1984; Morales 1991; Dauphin 2005; Bischler-Causse et al. 2005). ?CARTAGO: Paraíso cantón, Ujarrás, junto a las ruinas, *Crow 6141* (CR, **Dauphin 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia(?), New Zealand, Southwestern Pacific, Northeastern Pacific, Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA(?), Southeastern USA, Mexico, the Caribbean(?), Brazil(?), Southern South America(?).

Scapania (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

Scapania nemorea (L.) Grolle, *Rev. Bryol. Lichénol.* 32(3/4): 160, 1963 (Grolle 1963a).

≡*Jungermannia nemorea* L., *Syst. Nat., ed. 10*, 2: 1337, 1759 (Linnaeus 1759). Type: Europe.

Note: Old reports from Central America were rejected by Schuster (1974). The record below also needs verification.

?GUATEMALA. ?BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa(?), Macaronesia, Siberia, Russian Far East, Caucasus,

Western Asia, China, Eastern Asia, New Zealand, Western Canada(?), Eastern Canada, North-Central USA, Northeastern USA, South-Central USA, Southeastern USA.

Symphyogyna Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 66, 1836 (Nees and Montagne 1836).

Symphyogyna podophylla (Thunb.) Nees et Mont., *Flora* 29(9): 135, 1846 (Krauss 1846).

≡*Jungermannia podophylla* Thunb., *Prodr. Pl. Cap.* 2: 174, 1800 (Thunberg 1800). Type: South Africa.

Note: We are not aware of any firsthand report from Central America. Its absence in the region is surprising in view of its commonness in Colombia (Gradstein 2021).

?COSTA RICA. S. loc. (Grolle 1993, 2002; Váňa and Engel 2013). Note: We are not aware of any firsthand report from Central America.

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Australia, New Zealand, Mexico, the Caribbean(?), Western South America, Brazil, Southern South America, Subantarctic Islands.

Telaranea Spruce ex Schiffn., *Hepat. (Engl.-Prantl)*: 103, 1893 (Schiffner 1893a).

Telaranea sejuncta (Ångstr.) S.W.Arnell, *Bot. Not.* 110(1): 18, 1957 (Arnell 1957).

≡*Blepharostoma sejunctum* Ångstr., Öfvers. *Kongl. Vetensk.-Akad. Förh.* 33: 78, 1876 (Ångström 1876). Type: Brazil.

Note: Due to past synonymization of *Telaranea sejuncta* with *Telaranea nematodes* the distribution needs to be reevaluated. Most reports from Central America have been reidentified as *Telaranea nematodes*, but the specimens cited here do not seem to have been restudied.

?GUATEMALA. S. loc. (Fulford et al. 1970); S. loc., *Standley 89500* (F, **Fulford 1963b** as *Telaranea sejuncta* var. *sejuncta*). ?CHIQUIMULA: Jocotán municipio, Cerro Tixixi (Tishishi), 3–5 mi (4.8–8 km) N Jocotán, 500–1,500 m, *Steyermark 31629* (F, **Fulford 1963b** as *Telaranea sejuncta* var. *sejuncta*, **1966**; **Freire 2006**, including *Telaranea nematodes* as synonym; **Pérez 2009**). ?SUCHITEPÉQUEZ: SW slope of Volcán Zunil, *Steyermark 35289* (F, **Fulford 1966**; **Freire 2006**, including *Telaranea nematodes* as synonym; **Pérez 2009**).

?HONDURAS. S. loc. (Fulford et al. 1970). ?EL PARAÍSO: El Paraiso municipio, region of Agua Amarilla, 900–1,100 m, *Standley et al. 5108* (F, **Fulford 1966**); El Paraíso municipio, region of Agua Amarilla, above El Zamorano, 900–1,100 m, *Standley et al. 5115* (F, **Fulford 1966**).

?COSTA RICA. S. loc. (Fulford et al. 1970; Cole 1982, 1983). ?SAN JOSÉ: Dota cantón, south of El Empalme, *Little 5643* (FULF, hb. Little, **Fulford 1966**); S de San José, *Little 5511* (hb. Little, **Fulford 1966**).

Also reported from Northeastern USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil, Southern South America.

Trichocolea Dumort., *Commentat. Bot. (Dumortier)*: 113, 1822 (Dumortier 1822).

Trichocolea tomentella (Ehrh.) Dumort., *Syll. Jungerm. Europ.*: 67, 1831 (Dumortier 1831).

=*Jungermannia tomentella* Ehrh., *Hannover. Mag.* 21(18): 277, 1783 (Ehrhart 1783). Type: Germany.

Note: *Trichocolea tomentella* is a largely boreal taxon, and all reports from Neotropical areas should be questioned.

?GUATEMALA. ?QUETZALTENANGO: S. loc., *Steyermark 33838* (NY, Pérez 2009). ?ZACAPA: S. loc., *Steyermark 29963* (NY, Pérez 2009).

?COSTA RICA. S. loc. (Haupt 1942). ?ALAJUELA: San Ramón cantón, Nectandra Cloud Forest (UC, **Norris et al. 2017**). ?HEREDIA: Barva cantón, Volcán Barva, *Pittier 6045* (**Stephani 1893c**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Southwestern Pacific(?), Southeastern Pacific(?), Northwestern Pacific(?), Eastern Canada, North-Central USA, Northeastern USA, Southeastern USA, Mexico, the Caribbean(?), Northern South America(?), Western South America(?), Southern South America(?).

TAXA REJECTED FROM CENTRAL AMERICA

ANTHOCEROTOPHYTA

Anthoceros L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753).

Anthoceros caucasicus Steph., *Izv. Kavkazsk. Muz.* 8: 87, 1914 (Voronov' 1914). Type: Caucasus, Georgia.

=*Anthoceros mandonii* Steph., *Sp. Hepat. (Stephani)* 5: 997, 1916 (Stephani 1916a), syn. fide Sérgio (1987). Type: Madeira.

Note: *Anthoceros caucasicus* is a Eurasian species and cited from "Central America" (Proskauer 1958) without any information on what the report is based on, and we are not aware of any other report.

†**CENTRAL AMERICA.** S. loc. (Proskauer 1958).

Also reported from middle Europe, southwestern Europe, southeastern Europe, Macaronesia, Caucasus, western Asia.

Anthoceros punctatus L., *Sp. Pl.* 1: 1139, 1753 (Linnaeus 1753).

Type: Britain.

Note: This species is cited without any information on what the report is based on, and we are not aware of any other report. It probably refers to the Caribbean. In addition, all reports

outside Europe and surroundings should be compared to *Anthoceros agrestis*.

†**CENTRAL AMERICA.** S. loc. (Damsholt 2002).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe(?), North Africa, Macaronesia, West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa(?), Southern Africa, Western Indian Ocean, Russian Far East(?), Caucasus, Western Asia, China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, New Zealand(?), Southwestern Pacific, Western Canada(?), Eastern Canada(?), Northwestern USA, North-Central USA(?), Northeastern USA(?), Southwestern USA, South-Central USA(?), Southeastern USA, Mexico(?), the Caribbean, Western South America, Brazil, Southern South America, Subantarctic Islands(?).

Notothylas Sull., *Amer. J. Sci. Arts*, ser. 2, 1(1): 74, 1846 (Gray 1846).

Notothylas indica Kashyap, *Proc. Lahore Philos. Soc.* 4: 54, 1925 (Kashyap and Dutt 1925). Type: India.

Note: This species is from India, and the report from an accession list for a molecular study must certainly be an error.

†**PANAMA.** S. loc., *Duckett IE38* (M, **Villarreal et al. 2015**).

Also reported from West Tropical Africa, Indian Subcontinent, Indo-China.

MARCHANTIOPHYTA

Acrobolbus Nees, *Syn. Hepat.* 1: 5, 1844 (Gottsche et al. 1844).

Acrobolbus antillanus R.M.Schust., *J. Hattori Bot. Lab.* 90: 143, 2001 (Schuster 2001b). Type: Dominica.

Note: Plants from Costa Rica identified as *Acrobolbus antillanus* ("Costa Rican phase"; Schuster 2001b:146) belong to *Acrobolbus cuneifolius* (Gradstein 2021).

†**COSTA RICA.** Cordillera de Talamanca (Holz 2003; **Holz and Gradstein 2005b**); S. loc. (Schuster 1980d, 1983a; Gradstein and Uribe 2016; Schäfer-Verwimp and Van Melick 2016). †SAN JOSÉ: Between El Cañón and Ojo de Agua, 2,800–3,000 m, *Schuster RMS 71-950* (**Morales 1991**; **Schuster 2001b**; **Dauphin 2005**; **Schuster 2021**); Pérez Zeledón cantón, Cerro Buenavista (Cerro de la Muerte), 2,600–3,000 m (Gradstein et al. 2001b).

Also reported from the Caribbean, Northern South America, Western South America.

Asterella P.Beauv., *Dict. Sci. Nat. [F. Cuvier]* 3: 257, 1805 (Palisot de Beauvois 1805a).

Asterella venosa (Lehm. et Lindenb.) A.Evans, *Contr. U.S. Natl. Herb.* 20(8): 286, 1920 (Evans 1920).

≡*Fimbraria venosa* Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 29, 1832 (Lehmann 1832). Type: Brazil.

Note: This is a South American species mainly from SE Brazil and NE Argentina with some reports from Peru, Colombia, and Mexico. We are not aware of any specimen or firsthand reports to support the above general reports.

†**CENTRAL AMERICA.** S. loc. (Timme 1985; Long 2005).

Also reported from Mexico, Northern South America(?), Western South America, Brazil, Southern South America.

Bazzania Gray, *Nat. Arr. Brit. Pl.* 1: 704, 1821 (Gray 1821).

Bazzania praerupta (Reinw., Blume et Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 414, 1877 (Trevisan 1877).

≡*Jungermannia praeruptum* Reinw., Blume et Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 229, 1825 (Reinwardt et al. 1824a). Type: Java.

=*Jungermannia longa* Nees, *Linnaea* 6(4): 623, 1831 (Nees 1831). Type: Mauritius.

≡*Bazzania longa* (Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 415, 1877 (Trevisan 1877).

Note: *Bazzania praerupta* is a Paleotropical species frequently reported from the Neotropics under the name *Bazzania longa* following Fulford (1946). However, Gradstein (2017b) showed that the type of *Bazzania longa* is identical to *Bazzania praerupta* and does not occur in the Neotropics. Neotropical specimens named *Bazzania longa* belong to *Bazzania hookeri*.

†**GUATEMALA.** †BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, *Freire et al. 298*, *323* (USCG, **Freire et al. 2013** as *Bazzania longa*); Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Bazzania longa*).

†**COSTA RICA.** †ALAJUELA: Poás Volcano, *Griffin & Araya 32* (USJ, FLAS, **Morales 1991** as *Bazzania longa*; **Dauphin 2005** as *Bazzania longa*); Poás Volcano, *Griffin & Araya 36*, det. Bernecker (**Dauphin 2005** as *Bazzania longa*); San Ramón cantón, Nectandra Cloud Forest, 3 Nov 2010, *Norris 17153* (UC, **Norris et al. 2017** as *Bazzania longa*). †PUNTARENAS: S. loc. (**Merwin et al. 2001** as *Bazzania longa*); Coto Brus cantón, Fila Cruces, Laguna Gamboa, 8°57′00′N, 83°04′20′W, 1,400 m, *Dauphin & Chacón 1729* (CR, **Dauphin 2005** as *Bazzania longa*); Monteverde cantón, Monteverde Cloud Forest Preserve, 10°18′N, 84°48′W, Nov 1992–Jan 1994, *Gradstein et al.* (FLAS, U, USJ, **Gradstein et al. 2001a** as *Bazzania longa*).

†**PANAMA.** †CHIRIQUÍ: Gualaca distrito, Fortuna, 1,000 m, *Salazar Allen et al. 616a*, *628*, *698* (PMA, **Stotler et al. 1998** as *Bazzania longa*). †COCLÉ: La Pintada distrito, El Potroso, *Sytsma 1776* (MO, **Stotler et al. 1998** as *Bazzania longa*); Penonomé distrito, ~2 km W of Cerro Pilón, *Croat 37464* (MO, **Stotler et al. 1998** as *Bazzania longa*).

Also reported from West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean,

China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southeastern Pacific(?), Northeastern Pacific.

Calypogeia Raddi, *Jungermanniogr. Etrusca*: 31, 1818 (Raddi 1818b).

Calypogeia lophocoleoides Steph., *Bull. Herb. Boissier*, sér. 2, 8(9): 677 (409), 1908 (Stephani 1908g). Type: Dominica.

Note: Whittemore and Allen (1996) reported *Calypogeia lophocoleoides* from Belize based on misidentifications of *Calypogeia peruviana* and *Calypogeia subintegra*. The report from Costa Rica is also based on misidentification (G. Dauphin, unpubl.).

†**BELIZE.** †CAYO: Southern Maya Mountains, summit of Doyle's Delight, 16°29′N, 89°02′W, 1,140 m, 10 Dec 1993, *Allen 15333*, det. Dauphin May 2017 (MO-3981762! https://tropicos.org/specimen/90019402, **Whittemore and Allen 1996**). †TOLEDO: S. loc., Dec 1993, *Allen 15345A* (BRH, MO, **Whittemore and Allen 1996**).

†**COSTA RICA.** †PUNTARENAS: Coto Brus cantón, Fila Cruces, Cerro Paraguas, 1,400 m, *Dauphin & Chacón 1768* (CR, **Dauphin 2005**).

Also reported from the Caribbean, Northern South America.

Cololejeunea (Spruce) Steph., *Hedwigia* 30(5): 208, 1891 (Stephani 1891a).

Cololejeunea marginata (Lehm. et Lindenb.) Pearson, *Forh. Vidensk.-Selsk. Kristiania* 1892(8): 9, 1892 (Pearson 1892).

≡*Jungermannia marginata* Lehm. et Lindenb., *Nov. Stirp. Pug.* 5: 11, 1833 (Lehmann 1833). Type: Mauritius.

Note: This is an African species rejected from America mostly as *Cololejeunea submarginata* by Grolle (1981).

†**HONDURAS.** †ATLÁNTIDA: Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56785* (**Herzog 1951**); Tela municipio, Lancetilla Valley, 20–600 m, *Standley 56811 p.p.* (**Herzog 1951**); Tela municipio, Lancetilla Valley, 20–600 m, 6 Jul 1927–20 Mar 1928, *Standley 56758* (US, **Herzog 1951**).

Also reported from Western Indian Ocean.

Colura (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 12, 1835 (Dumortier 1835).

Colura calyptrifolia (Hook.) Dumort., *Recueil Observ. Jungerm.*: 12, 1835 (Dumortier 1835).

≡*Jungermannia calyptrifolia* Hook., *Brit. Jungermann.*: table 43, 1813 (Hooker 1813). Type: Ireland.

Note: This species has never been reported specifically from any Central American country, and the mention of "Central America" probably refers to the Caribbean, although it may well also occur in Central America.

†**CENTRAL AMERICA.** S. loc. (Zhu and So 2001; Zhu and Long 2003; Fischer 2013).

Also reported from Northern Europe, Southwestern Europe, Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean, Indian Subcontinent, Indo-China, the Caribbean, Northern South America, Western South America, Brazil, Southern South America, Subantarctic Islands.

Cylindrocolea R.M.Schust., *Bull. Natl. Sci. Mus. Tokyo, n.s.*, 12(3): 666, 1904 (Schuster 1969b).

Cylindrocolea planifolia (Steph.) R.M.Schust., *Nova Hedwigia* 22: 164, 1972 (Schuster 1971b).

≡*Cephaloziella planifolia* Steph., *Hedwigia* 32(5): 317, 1893 (Stephani 1893a). Type: Brazil.

Note: This specimen was reidentified as *Gymnocoleopsis* cf. *cylindriformis* by S. R. Gradstein, G. Dauphin, and A. Sierra in Feb 2023.

†**COSTA RICA.** †PUNTARENAS: Coto Brus cantón, Parque Internacional La Amistad, Estación Pittier, *Dauphin 1421* (Dauphin 2005 as *Cylindrocolea* cf. *planifolia*).

Also reported from South-Central USA(?), Southeastern USA, Northern South America, Brazil, Southern South America.

Drepanolejeunea (Spruce) Steph., *Hedwigia* 30(5): 209, 1891 (Stephani 1891a).

Drepanolejeunea angustifolia (Mitt.) Grolle, *J. Jap. Bot.* 40(7): 206, 1965 (Grolle 1965b).

≡*Lejeunea angustifolia* Mitt., *J. Proc. Linn. Soc., Bot.* 5(18): 116, 1860 (Mitten 1860a). Type: India.

=*Jungermannia cucullata γ tenuis* Nees, *Enum. Pl. Crypt. Javae*: 57, 1830 (Nees 1830), syn. fide Mizutani (1963). Type: Java.

≡*Drepanolejeunea tenuis* (Nees) J.B.Jack et Steph., *Hedwigia* 31(1): 12, 1892 (Jack and Stephani 1892).

Note: This is a SE Asian species already rejected from America by Bischler (1964).

†**COSTA RICA.** S. loc. (Schiffner 1898a as *Drepanolejeunea tenuis*; Evans 1903a as *Drepanolejeunea tenuis*; Bischler et al. 1961 as *Drepanolejeunea tenuis*). †HEREDIA: Rancho Flores forest, *Pittier 6041 p.p.* (**Stephani 1893c** as *Drepanolejeunea tenuis*; **Morales 1991** as *Drepanolejeunea tenuis*).

Also reported from China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Southwestern Pacific, Southeastern Pacific(?), Northwestern Pacific.

Frullania Raddi, *Jungermanniogr. Etrusca*: 9, 1818 (Raddi 1818b).

Frullania caulisequa (Nees) Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 12: 51, 1839 (Montagne 1839a).

≡*Jungermannia caulisequa* Nees, *Fl. Bras. (Martius)* 1(1): 373, 1833 (Nees 1833b). Type: Brazil.

Note: *Frullania caulisequa* included *Frullania obcordata* in Söderström et al. (2016), following Yuzawa and Koike (1989), but they were shown to be separate species by Winter and

Schäfer-Verwimp (2020), and all synonyms proposed by Yuzawa (1988) belong to the latter. *Frullania caulisequa* has not been confirmed to occur in Central America and is therefore excluded here.

†**GUATEMALA.** †ALTA VERAPAZ: Cobán, Las Victorias National Park, 2002 (**Andersohn 2004**); Tucurú municipio, Reserva Privada Chelemhá (**Pérez 2006**). †IZABAL: Los Amates municipio, Caserío El Paraíso, Sierra de Las Minas, 15°15′12″N, 89°05′43″W, 300 m, 2007, *Ramírez* (USCG, BIGU, **Ramírez 2007**).

†**BELIZE.** S. loc. (Whittemore and Allen 1996).

†**COSTA RICA.** Cordillera de Talamanca (**Holz and Gradstein 2005b**; Holz 2006). †ALAJUELA: Poás Volcano, *Morales & Canessa 476* (**Morales 1991**; **Dauphin 2005**). †CARTAGO: Alvarado cantón, Coliblanco, ~1,950 m, 30 Apr–2 May 1906, *Maxon 259* (**Morales 1991**; **Dauphin 2005**). †HEREDIA: Heredia cantón, Finca Isla Bonita, Vara Blanca, Atlantic slope, 1,524 m, 2–3 Feb 1947, *Svihla 47-941*, *47-984*, *47-985*, *47-986*, *47-993*, *47-1006* (**Morales 1991**; **Dauphin 2005**). †SAN JOSÉ: Dota cantón, "Los Robles" (Los Santos Forest Reserve, 9°32′N, 83°51′W), 2,200–2,500 m, Sep 1999–May 2000 (CR, **Holz et al. 2002**); Dota cantón, San Gerardo (Dauphin 2005); Dota cantón, San Gerardo, *Holz* (**Holz 2003**); Los Santos Forest Reserve, ~2,900 m (**Holz and Gradstein 2005a**).

†**PANAMA.** Canal Zone (Schäfer-Verwimp 2014). †CHIRIQUÍ: Gualaca distrito, Fortuna Forest Reserve, at mouth of Quebrada Samudio, 1,100–1,280 m (**Salazar Allen et al. 2021**); Gualaca distrito, Fortuna Forest Reserve, Valle de Hornito, 1,300–1,700 m (**Salazar Allen et al. 2021**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°44.3′N, 82°14.7′W, 1,100 m, 30 Mar 2009, *Schäfer-Verwimp & Verwimp 34511/A* (JE, **Schäfer-Verwimp 2014**); Gualaca distrito, Reserva Forestal Fortuna along road from Chiriquí to Chiriquí Grande, 8°39′N, 82°12′W, 1,380 m, *Schäfer-Verwimp & Verwimp 34363/C* (JE, **Schäfer-Verwimp 2014**). COCLÉ: Antón distrito, El Valle de Antón, along road to Mato Ahogado, 8°37.05′N, 82°06.60′W, 670 m, 4 Apr 2009, *Schäfer-Verwimp & Verwimp 34765* (JE, **Schäfer-Verwimp 2014**); Antón distrito, El Valle de Antón, ascent to "India Dormida," 8°36.8′N, 80°08.8′W, 640–870 m, 24 Mar 2009, *Schäfer-Verwimp & Verwimp 34166/A* (JE, **Schäfer-Verwimp 2014**). †DARIÉN: S. loc. (Schäfer-Verwimp 2014). †PANAMA WEST: La Chorrera distrito, Barro Colorado Island, Camino Wheeler *5–6*, *Salazar Allen & Chung 4737b* (PMA, **Stotler et al. 1998**). †VERAGUAS: Santa Fe distrito, base of Cerro Tute, 8°30′N, 81°06′W, 710–890 m, 26 Mar 2009, *Schäfer-Verwimp & Verwimp 34284* (JE, **Schäfer-Verwimp 2014**); Santa Fe distrito, between the village and Alto de Piedra, 8°31′N, 81°06′W, 635–600 m, 27 Mar 2009, *Schäfer-Verwimp & Verwimp 34326* (JE, **Schäfer-Verwimp 2014**).

†**COCOS I.** S. loc. (Dauphin 1995, 2005); S. loc., 1966, *Fosberg & Klawe* (Morales 1991).

Also reported from South-Central USA, Southeastern USA, Mexico, the Caribbean, Northern South America, Western South America, Brazil.

Frullania dilatata (L.) Dumort., *Recueil Observ. Jungerm.*: 13, 1835 (Dumortier 1835) subsp. ***dilatata***.

≡*Jungermannia dilatata* L., *Sp. Pl.* 1: 1133, 1753 (Linnaeus 1753). Type: Britain.

Note: This is a Eurasian species only mentioned from Central America in a study on *Nipponolejeunea*. The report must be rejected, as has been done for all other reports from America.

†**COSTA RICA.** S. loc., 22–24 Sep 2000, *Piippo* (H, **Ahonen 2006**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Macaronesia, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent.

Frullania falciloba Lehm., *Nov. Stirp. Pug.* 8: 20, 1844 (Lehmann 1844). Type: Australia.

Note: This is an Australasian species with no modern reports from the Neotropics.

†**PANAMA.** S. loc. (Schiffner 1898a, with a question mark). †PANAMA WEST: Capira distrito, Cruces (**Mitten 1854b**).

Also reported from Australia, New Zealand.

Frullania hypoleuca Nees, *Observ. bot.*: 470, 1843 (Gottsche et al. 1843). Type: Hawaii.

Note: This species is widespread in Australasia and the Pacific. These unsupported reports, as well as all others from America, must be erroneous.

†**COSTA RICA.** S. loc. (Miller et al. 1983).

†**COCOS I.** S. loc. (Miller et al. 1983).

Also reported from China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, Southwestern Pacific, Southeastern Pacific(?), Northwestern Pacific, Northeastern Pacific.

Frullania inflata Gottsche, *Syn. Hepat.* 3: 424, 1845 (Gottsche et al. 1845a). Type: USA.

Note: This is a boreal species recorded from North America south to Mexico. This report was based on a misidentification of *Frullania ericoides*.

†**NICARAGUA.** †CHINANDEGA: El Viejo municipio, Gulf of Fonseca, east of Volcano Coseguina, 7 Jul 1932, *Howell 244* (CAS-692237, **Clark 1953a**).

Also reported from Russian Far East, China, Eastern Asia, Indian Subcontinent, Western Canada, Eastern Canada(?), Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico.

Frullania lindenbergii Lehm., *Nov. Stirp. Pug.* 8: 17, 1844 (Lehmann 1844). Type: South Africa.

Note: *Frullania lindenbergii* is an African species, and all American reports were rejected by Schäfer-Verwimp et al. (2012).

†**HONDURAS.** S. loc. (Lemos-Michel 1983).

†**COSTA RICA.** S. loc. (Lemos-Michel 1983).
†**PANAMA.** S. loc. (Lemos-Michel 1983).
†**COCOS I.** S. loc. (Lemos-Michel 1983).

Also reported from West-Central Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Western Indian Ocean, Subantarctic Islands.

Fuscocephaloziopsis Fulford, *Mem. New York Bot. Gard.* 11(3): 353, 1968 (Fulford 1968).

Fuscocephaloziopsis connivens (Dicks.) Váňa et L.Söderstr., *Phytotaxa* 112(1): 9, 2013 (Váňa et al. 2013b) subsp. ***sandwicensis*** (Mont.) Váňa et L.Söderstr., *Phytotaxa* 112(1): 9, 2013 (Váňa et al. 2013b).

≡*Jungermannia sandwicensis* Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 19: 249, 1843 (Montagne 1843). Type: Hawaii.

≡*Blepharostoma sandwicense* (Mont.) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 417, 1877 (Trevisan 1877).

Note: This species is known from the Caribbean, and all mentions from "Central America" probably refer to that area.

†**CENTRAL AMERICA.** S. loc. (Miller et al. 1983; Schuster 2002).

Also reported from Southeastern Pacific, Northeastern Pacific, Mexico, the Caribbean.

Hymenophyton Dumort., *Recueil Observ. Jungerm.*: 25, 1835 (Dumortier 1835).

Hymenophyton flabellatum (Labill.) Dumort. ex Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 430, 1877 (Trevisan 1877).

≡*Jungermannia flabellata* Labill., *Nov. Holl. Pl.* 2: 109, 1806 (Labillardière 1806). Type: Australia.

Note: This species was rejected from Costa Rica as *Jensenia erythropus* by Gradstein et al. (1994).

†**COSTA RICA.** †ALAJUELA: Poás Volcano, Aug 1977, *Griffin et al. 115* (FLAS-020500, **Morales and Griffin 1983**; **Morales 1991**).

Also reported from Southern Africa, Australia, New Zealand, Southwestern Pacific, Western South America, Brazil, Southern South America, Subantarctic Islands(?).

Isotachis Mitt., *Bot. Antarct. voy.* II (*Fl. Nov.-Zel.* 2): 148, 1854 (Mitten 1854a).

Isotachis humectata (Hook.f. et Taylor) Steph., *Sp. Hepat. (Stephani)* 3: 654, 1909 (Stephani 1909b).

≡*Jungermannia humectata* Hook.f. et Taylor, *London J. Bot.* 3: 462, 1844 (Hooker and Taylor 1844c). Type: Falkland Islands.

=*Jungermannia madida* Hook.f. et Taylor, *London J. Bot.* 3: 465, 1844 (Hooker and Taylor 1844c) nom. illeg. (ICN2018 Art. 53.1; hom. illeg. [non Nees 1833]), syn. fide Engel (1978). Type: Tierra del Fuego.

≡*Isotachis madida* Mitt., *Bot. Antarct. voy.* II (*Fl. Nov.-Zel.* 2): 149, 1854 (Mitten 1854a).

COSTA RICA. ALAJUELA: Poás Volcano, *Griffin & Araya 67* (USJ, FLAS, **Morales 1991** as *Isotachis madida*); Poás Volcano, 31 Jul 1977, *Griffin & Araya 69* (USJ, FLAS, **Morales and Griffin 1983** as *Isotachis madida*; **Morales 1991** as *Isotachis madida*). CARTAGO: Pococí cantón, La Georgina, *Griffin et al. 483* (FLAS, **Morales 1991** as *Isotachis madida*; **Kappelle 1996** as *Isotachis madida*).

Also reported from Southern South America, Subantarctic Islands.

Lejeunea Lib., *Ann. Gen. Sci. Phys.* 6: 373, 1820 (Libert 1820).

Lejeunea apiculata Sande Lac., *Ned. Kruidk. Arch.* 3: 421, 1854 (Sande Lacoste 1854). Type: Java.

≡*Stenolejeunea apiculata* (Sande Lac.) R.M.Schust., *J. Hattori Bot. Lab.* 89: 159, 2000 (Schuster 2000b).

Note: This is a Paleotropical species that should be rejected from the Neotropics.

†**GUATEMALA.** S. loc., *Friedrichstahl* (G, **Bischler 1966** as *Stenolejeunea apiculata*).

Also reported from China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific.

Lepidozia Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

Lepidozia trichodes (Reinw., Blume et Nees) Nees, *Syn. Hepat.* 2: 203, 1845 (Gottsche et al. 1845b).

≡*Jungermannia trichodes* Reinw., Blume et Nees, *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 12(1): 199, 1824 (Reinwardt et al. 1824a). Type: Java.

Note: This is an Asiatic species with some old reports from South America and is only referred to "Central America" in a report from the Philippines.

†**CENTRAL AMERICA.** S. loc. (Merrill 1906, with a question mark).

Also reported from China, Eastern Asia, Indian Subcontinent(?), Indo-China, Papuasia, Southwestern Pacific, Southeastern Pacific.

Lophozia (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

Lophozia ventricosa var. ***longiflora*** (Nees) Macoun, *Cat. Canad. Pl., Lich. Hepat.*: 17, 1902 (Macoun 1902).

≡*Jungermannia longiflora* Nees, *Naturgesch. Eur. Leberm.* 2: 95, 1836 (Nees 1836). Type: Poland.

≡*Lophozia longiflora* (Nees) Schiffn., *Sitzungsber. deutsch. naturwiss.-med. Vereins Böhmen "Lotos" Prag* 51(7): 257, 1903 (Schiffner 1903).

Note: For a long time *Lophozia longiflora* was used as the name for what is now *Lophozia guttulata*, and all reports from Central America belong to the latter species.

†**GUATEMALA.** S. loc. (Gradstein and Váňa 1994 as *Lophozia longiflora*; Paton 1999 as *Lophozia longiflora*; Gradstein et al. 2001b as *Lophozia longiflora*; Schäfer-Verwimp and Pócs 2009 as *Lophozia longiflora*). †HUEHUETENANGO: San Mateo Ixtatán municipio, above San Mateo, 9,700 ft, 3 Jan 1946, *Sharp 4949* (TENN, **Gradstein and** Váňa **1987** as *Lophozia longiflora*). †QUETZALTENANGO: San Carlos Sija municipio, Getenagre near Sija, 9,500 ft (2,896 m), 1 Jan 1945, *Sharp 1133* (TENN, **Gradstein and** Váňa **1987** as *Lophozia longiflora*).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Siberia, Russian Far East, Middle Asia(?), Caucasus, Western Asia, Eastern Asia(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico.

Marchantia L., *Sp. Pl.* 1: 1137, 1753 (Linnaeus 1753).

Marchantia linearis Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 8, 1832 (Lehmann 1832). Type: India orientalis.

Note: Reports of this Southeast Asian species from the American continents belong to *Marchantia inflexa* (cf. Bischler 1984).

†**GUATEMALA.** S. loc., *Watson* (**Underwood 1895**).

Also reported from Indian Subcontinent, Indo-China, Malesia.

Nowellia Mitt., *Nat. Hist. Azores*: 321, 1870 (Mitten 1870).

Nowellia dominicensis Steph., *Sp. Hepat. (Stephani)* 6: 443, 1924 (Stephani 1924). Type: Dominica, Guadeloupe.

Note: This species is only mentioned as occurring in "Central America" by Cole, but she probably included the Caribbean in her concept of Central America.

†**CENTRAL AMERICA.** S. loc. (Cole 1982, 1983).

Also reported from the Caribbean, Northern South America.

Nowellia wrightii (Gottsche ex Spruce) Steph. ex Duss, *Enum. musc. Antilles franç., Hép.*: 21, 1903 (Duss 1903).

≡*Cephalozia wrightii* Gottsche ex Spruce, *J. Linn. Soc., Bot.* 30(210): 354, 1895 (Gepp 1895). Type: Cuba.

Note: This species is only mentioned as occurring in "Central America" by Cole, but she probably included the Caribbean in her concept of Central America.

†**CENTRAL AMERICA.** S. loc. (Cole 1982, 1983).

Also reported from the Caribbean.

Odontoschisma (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 19, 1835 (Dumortier 1835).

Odontoschisma brasiliense Steph., *Bull. Herb. Boissier*, sér. 2, 8(8): 585 (=*Spec. Hepat. [Stephani]* 3: 369), 1908 (Stephani 1908b). Type: Brazil.

Note: This is a SE Brazilian species (Gradstein and Ilkiu-Borges 2015).

†**GUATEMALA.** †BAJA VERAPAZ: Purhulhá municipio, Biotopo Universitario para la Conservación del Quetzal, 15°30′N, 90°13′15″W (**Freire et al. 2005** as *Odontoschisma brasiliense*). †QUICHÉ: Uspantán, 15°27′23.7″N, 90°47′58.9″W, 2,365 m, 2007, *Pérez et al. 2340* (USCG, Pérez 2009 as *Odontoschisma brasiliense*).

Also reported from Brazil.

Plagiochila (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

Plagiochila arbuscula (Brid. ex Lehm. et Lindenb.) Lindenb., *Sp. Hepat. (Lindenberg)* 1: 23, 1839 (Lindenberg 1839).

≡*Jungermannia arbuscula* Brid. ex Lehm. et Lindenb., *Nov. Stirp. Pug.* 4: 63, 1832 (Lehmann 1832). Type: Java.

Note: This is a Paleotropical species, and the report from Costa Rica must belong to some other species.

†**COSTA RICA.** †SAN JOSÉ: S. loc. (Markham and Fernández 2021).

Also reported from China, Eastern Asia, Indian Subcontinent, Indo-China, Malesia, Papuasia, Australia, New Zealand, Southwestern Pacific, Southeastern Pacific, Northwestern Pacific.

Plagiochila asplenioides (L.) Dumort., *Recueil Observ. Jungerm.*: 14, 1835 (Dumortier 1835).

≡*Jungermannia asplenioides* L., *Sp. Pl.* 1: 1131, 1753 (Linnaeus 1753). Type: Great Britain.

Note: Reports of the holarctic *Plagiochila asplenioides* from Central America are erroneous. Stotler et al. (1998) already excluded it from Panama, and a revision of the section *Plagiochila* (type: *P. asplenioides*) in the Neotropics by Müller et al. (1999) did not yield any genuine Neotropical material of *P. asplenioides*.

†**COSTA RICA.** †SAN JOSÉ: S. loc. (Markham and Fernández 2021).

†**PANAMA.** †PANAMA WEST: La Chorrera distrito, Barro Colorado Island, *Zatek & Shattuck* (**Haynes 1933**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Siberia, Caucasus, Western Asia, Eastern Asia(?), Subarctic America, Western Canada, Northwestern USA, Southwestern USA(?), South-Central USA.

Plagiochila heteromalla **var.** *γ minus-dentata* Hampe et Gottsche, *Linnaea* 25(3): 341, 1852 (Hampe and Gottsche 1852). Type: Puerto Rico.

Note: This species is only erroneously reported from Costa Rica (as type, but the type is from Puerto Rico), and the value of the variety is unknown to us.

†**COSTA RICA.** S. loc., *Schwanecke* (**Geissler and Bischler 1989**).

Also reported from the Caribbean.

Porella L., *Sp. Pl.* 1: 1106, 1753 (Linnaeus 1753).

Porella mexicana (Hampe ex Gottsche, Lindenb. et Nees) Trevis., *Mem. Reale Ist. Lombardo Sci., Ser. 3, Cl. Sci. Mat.* 4(13): 407, 1877 (Trevisan 1877).

≡*Madotheca mexicana* Hampe ex Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 273, 1845 (Gottsche et al. 1845b): Type: Mexico.

Note: This species is only reported secondary from "Central America" by Cole, but her concept of Central America was probably much wider than used here.

†**COSTA RICA.** S. loc. (Cole 1982, 1983).

Also reported from Mexico.

Radula Dumort., *Commentat. Bot.* (*Dumortier*): 112, 1822 (Dumortier 1822).

Radula boryana (F.Weber) Nees ex Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 18: 13, 1842 (Montagne 1842a).

≡*Jungermannia boryana* F.Weber, *Hist. Musc. Hepat. Prodr.*: 58, 1815 (Weber 1815). Type: Réunion.

Note: *Radula boryana* is an African taxon rejected from America, where it has been reported due to the synonymy with *Radula gottscheana* (first proposed by Castle 1936), but the latter species is accepted in many later publications (but see note under *Radula gottscheana*).

†**GUATEMALA.** S. loc. (Miller et al. 1983 as *Radula boryana*; Fulford and Sharp 1990 as *Radula boryana*). †ALTA VERAPAZ: S. loc., 1905, *Maxon & Hay 3259* (Y, **Castle 1936** as *Radula boryana*).

†**COSTA RICA.** S. loc. (Miller et al. 1983 as *Radula boryana*; Fulford and Sharp 1990 as *Radula boryana*). †CARTAGO: Jiménez cantón, Río Naranjo, 1893, *Tonduz* (G, **Castle 1936** as *Radula boryana*). †PUNTARENAS: Cordillera de Talamanca, N of Santa Elena, 1,100 m, *Davidse et al. 28217* (GOET, MO, **Gradstein et al. 2022** as *Radula boryana*). †SAN JOSÉ: Buena Vista, 1903, *Cook & Doyle 118*, *129*, *146* (Y, **Castle 1936** as *Radula boryana*).

†**PANAMA.** †CHIRIQUÍ: Gualaca distrito, Cerro Pinola, *Spörle 1.1* (PMA, **Spörle 1990** as *Radula boryana*).

Also reported from West Tropical Africa, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, South Tropical Africa, Southern Africa, Middle Atlantic Ocean, Western Indian Ocean.

Radula complanata (L.) Dumort., *Syll. Jungerm. Europ.*: 28, 1831 (Dumortier 1831).

≡*Jungermannia complanata* L., *Sp. Pl.* 1: 1133, 1753 (Linnaeus 1753). Type: Europe.

Note: *Radula complanata* is a boreal and temperate taxon that has been reported several times from tropical and subtropical areas, but these reports are erroneous or highly doubtful.

†**COSTA RICA.** S. loc. (Cole 1982, 1983). †PUNTARENAS: Monteverde (Morales 1991, doubting the correctness of the report); Monteverde, 9 Jan 1965, *James, M. 7* (R, **Reed and Robinson 1971**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 47* (R, **Reed and Robinson 1971**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 77* (R, MO-6163170, **Reed and Robinson 1971**); Monteverde, 10–17 Mar 1965, *James, W. & James, M. 89* (R, **Reed and Robinson 1971**).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, North Africa, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Indian Subcontinent, Malesia(?), Northwestern Pacific(?), Northeastern Pacific(?), Subarctic America, Western Canada, Eastern Canada, Northwestern USA, North-Central USA, Northeastern USA, Southwestern USA, South-Central USA, Southeastern USA, Mexico.

Radula sullivantii Austin, *Hepat. bor.-amer.*: 22, 1873 (Austin 1873). Type: USA.

Note: This species is only mentioned from Costa Rica by Stephani (1910a). We reject the report until it can be confirmed.

†**COSTA RICA.** S. loc. (Stephani 1910a).

Also reported from Southeastern USA.

Riccardia Gray, *Nat. Arr. Brit. Pl.* 1: 679, 1821 (Gray 1821).

Riccardia palmata (Hedw.) Carruth., *J. Bot.* 3: 302, 1865 (Carruthers 1865).

≡*Jungermannia palmata* Hedw., *Theoria generat.*: 87, 1784 (Hedwig 1784).

Note: This record is given as "Mittelamerika," which in the concept of Schulz and Dengler (2006) probably also included the Caribbean. However, the occurrence in the Caribbean is also questionable.

†**CENTRAL AMERICA.** S. loc. (Schulz and Dengler 2006).

Also reported from Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Macaronesia, Siberia, Russian Far East, Middle Asia, Caucasus, Western Asia, China, East Asia, Indian Subcontinent, Southeast Asia, Subarctic North America, Western Canada, Eastern Canada, Northeastern USA, North-Central USA, Northeastern USA, Southwestern USA, Southeastern USA, Mexico, the Caribbean(?).

Riccia L., *Sp. Pl.* 1: 1138, 1753 (Linnaeus 1753).

Riccia planobiconvexa Steph., *Bih. Kongl. Svenska Vetensk.-Akad. Handl.* 23(III, 2): 29, 1897 (Stephani 1897c). Type: Brazil.

Note: Neither Jovet-Ast (1991) nor Bischler-Causse et al. (2005) reported specimens of *Riccia planobiconvexa* from Costa Rica. Hässel (1962) considered *Riccia weinionis* a synonym of *Riccia planobiconvexa*, which was followed by Jovet-Ast (1981) but refuted by Jovet-Ast (1991) and Bischler-Causse et al. (2005), who cited the Guanacaste specimen below under *Riccia weinionis*. All specimens probably belong to the latter.

†**COSTA RICA.** S. loc. (Gradstein and Weber 1982; Gradstein et al. 2018b; Silva et al. 2018). †ALAJUELA: S. loc., 1,000 m,

11 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981**); Alajuela cantón, Alajuela city, *Jovet-Ast* (**Morales 1991**; **Dauphin 2005**). †CARTAGO: Turrialba cantón, CATIE, 600 m, 13 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981**); Turrialba, 13 Aug 1979, *Jovet-Ast* (PC, **Morales 1991**; **Dauphin 2005**). †GUANACASTE: Liberia, 21 Aug 1979, *Jovet-Ast* (**Jovet-Ast 1981**; **Morales 1991**; **Dauphin 2005**).

Also reported from Western South America, Brazil, Southern South America.

Solenostoma Mitt., *J. Proc. Linn. Soc., Bot.* 8(29): 51, 1865 (Mitten 1865).

Solenostoma fossombronioides (Austin) R.M.Schust., *Hepat. Anthoc. N. Amer.* 2: 1027, 1969 (Schuster 1969a).

≡*Jungermannia fossombronioides* Austin, *Proc. Acad. Nat. Sci. Philadelphia* 21: 220, 1869 (Austin 1869). Type: USA (New Jersey).

Note: The location was only given as "middle America" in a general note to the distribution, but no record south of Mexico is known.

†**CENTRAL AMERICA.** Fulford and Sharp (1990 as *Jungermannia 'foosombronioides'*).

Also reported from North-Central USA, Northeastern USA, Southeastern USA, Mexico.

Symphyogyna Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 66, 1836 (Nees and Montagne 1836).

Symphyogyna circinata Nees et Mont., *Ann. Sci. Nat. Bot.*, sér. 2, 5: 69, 1836 (Nees and Montagne 1836). Type: Chile.

Note: This species is from southern South America and Tristan da Cunha. The old record from Panama was reidentified as *Symphyogyna brasiliensis* by Stotler et al. (1998).

†**PANAMA.** S. loc. (**Mitten 1854b**).

Also reported from the Caribbean(?), Western South America, Brazil(?), Southern South America, Subantarctic Islands.

Syzygiella Spruce, *J. Bot.* 14: 234, 1876 (Spruce 1876a).

Syzygiella colorata (Lehm.) K.Feldberg, Váňa, Hentschel et Heinrichs, *Cryptog. Bryol.* 31(2): 144, 2010 (Feldberg et al. 2010a).

≡*Jungermannia colorata* Lehm., *Linnaea* 4(3): 366, 1829 (Lehmann 1829). Type: South Africa.

≡*Jamesoniella colorata* (Lehm.) Spruce ex Schiffn., *Hepat. (Engl.-Prantl)*: 83, 1893 (Schiffner 1893a).

Note: This is a southern temperate to subantarctic species, and all reports from the Neotropics belong to *Syzygiella rubricaulis* (fide Grolle 1971a as *Jamesoniella rubricaulis*).

†**COSTA RICA.** S. loc. (Stephani 1901d as *Jamesoniella colorata*; Reimers 1926 as *Jamesoniella colorata*; Pagán 1939a as *Jamesoniella colorata*; Arnell 1958a as *Jamesoniella colorata*; Cole 1982, 1983, both as *Jamesoniella colorata*). †ALAJUELA: Poás Volcano, 10 Jun 1968, *Morales & Canessa 443* (**Morales and Griffin 1983** as *Jamesoniella colorata*). †HEREDIA: San Isidro cantón, Cerro de Caricias, 2,000–2,400 m, *Standley 51999*, *52259*, *52277*, *etc.* (**Herzog 1938** as *Jamesoniella colorata*). †SAN JOSÉ: Moravia cantón, Cerro Zurquí, 2,000–2,500 m, *Standley 48176*, *48183*, *etc.* (**Herzog 1938** as *Jamesoniella colorata*); *Jamesoniella colorata*); Moravia cantón, La Hondura, 1,200–1,500 m, *Standley 51816* (**Herzog 1938** as *Jamesoniella colorata*); Moravia cantón, La Palma, *Pittier 6007* (**Stephani 1893c** as *Jungermannia colorata*); Vásquez de Coronado cantón, Las Nubes, ~1,900 m, *Standley 38431* (**Herzog 1938** as *Jamesoniella colorata*); Vásquez de Coronado cantón, Las Nubes, ~1,900 m, *Standley 38461* (**Herzog 1938** as *Jamesoniella colorata*); Vásquez de Coronado cantón, Las Nubes, ~1,900 m, *Standley 38836* (**Herzog 1938** as *Jamesoniella colorata*).

Also reported from South Tropical Africa, Southern Africa, Western Indian Ocean, Australia, New Zealand, Southern South America, Subantarctic Islands.

Syzygiella manca Steph., *Hedwigia* 31(1): 14, 1892 (Jack and Stephani 1892). Type: Ecuador.

Note: This species occurs from Mexico to northern and western South America and SE Brazil. The single report from Central America was reidentified as *Syzygiella anomala* by Inoue (1966).

†**COSTA RICA.** S. loc. (Cole 1982, 1983; Rico and Pócs 2004). †SAN JOSÉ: Vásquez de Coronado cantón, Las Nubes, 1,500–1,900 m, *Standley 38692* (S, B-12165, **Carl 1931a**; **Herzog 1938**).

Also reported from Macaronesia, West-Central Tropical Africa, Northeast Tropical Africa, East Tropical Africa, Western Indian Ocean, Mexico, Northern South America, Western South America, Brazil.

SYNONYMS

Acrobolbus latifolius (R.M.Schust.) Dimon, Váňa, Schäf.-Verw., Heinrichs et M.A.M.Renner nom. inval. = *Acrobolbus laxus*

Acrolejeunea juliformis (Nees) Steph. ex Schiffn. = *Archilejeunea fuscescens*

Adelanthus crossii Spruce = *Pseudomarsupidium decipiens*

Adelanthus decipiens (Hook.) Mitt. ≡ *Pseudomarsupidium decipiens*

Adelanthus parvus Herzog = *Adelanthus lindenbergianus*

Adelanthus unciformis (Hook.f. et Taylor) Spruce = *Adelanthus lindenbergianus*

Amphilejeunea patellifera (Spruce) R.M.Schust. = *Lejeunea catinulifera*

Amphilejeunea reflexistipula (Lehm. et Lindenb.) Gradst. ≡ *Lejeunea reflexistipula*

Anastrophyllum conforme (Lindenb. et Gottsche) Steph. = *Anastrophyllum tubulosum*

Anastrophyllum hellerianum (Nees ex Lindenb.) R.M.Schust. ≡ *Crossocalyx hellerianus*

Anastrophyllum leucostomum (Taylor) Steph. = *Anastrophyllum auritum*
Andrewsianthus jamesonii (Mont.) Váňa ≡ *Lophonardia jamesonii*
Andrewsianthus kilimanjaricus (S.W.Arnell) Grolle et Váňa = *Lophonardia jamesonii*
Aneura andina Spruce = *Riccardia fucoidea*
Aneura cervicornis Spruce = *Riccardia poeppigiana*
Aneura fucoidea (Sw.) Besch. ≡ *Riccardia fucoidea*
Aneura glaziovii Spruce ≡ *Riccardia glaziovii*
Aneura plumiformis Spruce = *Riccardia fucoidea*
Aneura tripinnata Steph. = *Riccardia glaziovii*
Anthoceros cristosporus Steph. = *Nothoceros vincentianus*
Anthoceros donnellii Austin = *Phaeoceros carolinianus*
Anthoceros fimbriatus Gottsche ≡ *Phaeomegaceros fimbriatus*
Anthoceros flexivalvis Gottsche et Nees ≡ *Phaeoceros flexivalvis*
Anthoceros laevis L. ≡ *Phaeoceros laevis*
Anthoceros mandonii Steph. = *Anthoceros caucasicus*
Anthoceros pulcherrimus (Steph.) Haupt = *Phaeomegaceros fimbriatus*
Anthoceros vegetans M.Howe = *Anthoceros tuberculatus*
Aphanolejeunea angustissima Steph. = *Cololejeunea papillosa*
Aphanolejeunea azorica (V.Allorge et Jovet-Ast) Bern.-Lück. et Pócs ≡ *Cololejeunea azorica*
Aphanolejeunea camillii (Lehm.) R.M.Schust. ≡ *Cololejeunea camillii*
Aphanolejeunea cingens Herzog ≡ *Cololejeunea cingens*
Aphanolejeunea clavatopapillata (Steph.) M.E.Reiner = *Cololejeunea jamesii*
Aphanolejeunea costaricensis Bern.-Lück. nom. inval. = *Cololejeunea costaricensis*
Aphanolejeunea costaricensis Bern.-Lück. ≡ *Cololejeunea costaricensis*
Aphanolejeunea crenata A.Evans ≡ *Cololejeunea crenata*
Aphanolejeunea cyathiphylla Herzog = *Cololejeunea papillosa*
Aphanolejeunea diaphana var. *cristulata* (R.M.Schust.) R.M.Schust. = *Cololejeunea diaphana*
Aphanolejeunea ephemeroides R.M.Schust. = *Cololejeunea sintenisii*
Aphanolejeunea exigua A.Evans ≡ *Cololejeunea microscopica* var. *exigua*
Aphanolejeunea gracilis Jovet-Ast ≡ *Cololejeunea gracilis*
Aphanolejeunea heterophylla (K.I.Goebel) R.M.Schust. = *Cololejeunea gracilis* var. *gracilis*
Aphanolejeunea longifolia Jovet-Ast ≡ *Cololejeunea antillana*
Aphanolejeunea microscopica var. *africana* (Pócs) Pócs et A.Lücking ≡ *Cololejeunea microscopica* var. *africana*
Aphanolejeunea microscopica var. *exigua* (A.Evans) Pócs et Bern.-Lück. ≡ *Cololejeunea microscopica* var. *exigua*
Aphanolejeunea minuta R.M.Schust. ≡ *Cololejeunea minuscula*
Aphanolejeunea moralesiae Bern.-Lück. nom. inval. = *Cololejeunea moralesiae*
Aphanolejeunea moralesiae Bern.-Lück. ≡ *Cololejeunea moralesiae*
Aphanolejeunea pocsii Bern.-Lück. nom. inval. = *Cololejeunea berneckerae*
Aphanolejeunea pocsii Bern.-Lück. ≡ *Cololejeunea berneckerae*
Aphanolejeunea pustulosa (Jovet-Ast) Bern.-Lück. et Pócs = *Cololejeunea papilliloba*
Aphanolejeunea sicifolia (Steph.) Steph. ex A.Evans = *Cololejeunea sicifolia*
Aphanolejeunea sintenisii Steph. ≡ *Cololejeunea sintenisii*
Aphanolejeunea subdiaphana var. *cristulata* (R.M.Schust.) Pócs = *Cololejeunea diaphana*
Aphanolejeunea truncatifolia Horik. = *Cololejeunea diaphana*
Aphanolejeunea verrucosa Jovet-Ast = *Cololejeunea microscopica* var. *africana*
Aphanolejeunea winkleri M.I.Morales et A.Lücking ≡ *Cololejeunea winkleri*
Apomarsupella africana (Steph. ex Bonner) R.M.Schust. = *Gymnomitrion africanum*
Arachniopsis diacantha (Mont.) M.Howe ≡ *Telaranea diacantha*
Arachniopsis monodactyla (Spruce) R.M.Schust. ≡ *Monodactylopsis monodactyla*
Archilejeunea auberiana (Mont.) Steph. ≡ *Dibrachiella auberiana*
Archilejeunea florentissima (Spruce) Spruce ex Steph. nom. inval. = *Dibrachiella auberiana*
Archilejeunea juliformis (Nees) Gradst. = *Archilejeunea fuscescens*
Archilejeunea leprieurii (Mont.) Schiffn. = *Dibrachiella parviflora*
Archilejeunea parviflora (Nees) Steph. ≡ *Dibrachiella parviflora*
Archilejeunea parviflora var. *florentissima* (Spruce) Gradst. et Buskes = *Dibrachiella auberiana*
Archilejeunea porelloides (Spruce) Schiffn. ≡ *Archilejeunea ludoviciana* subsp. *porelloides*
Archilejeunea porelloides subsp. *chocoensis* Gradst. nom. inval. = *Archilejeunea ludoviciana* subsp. *ludoviciana*
Archilejeunea rufa (Spruce) Steph. = *Archilejeunea fuscescens*
Archilejeunea tonduzana Steph. ≡ *Cheilolejeunea tonduzana*
Archilejeunea viridissima f. *multiflora* Herzog ex Standl. nom. inval. = *Dibrachiella parviflora*
Archilejeunea xanthocarpa (Lehm. et Lindenb.) Steph. ≡ *Cheilolejeunea xanthocarpa*
Aspiromitus microsporus Steph. ≡ *Phaeoceros microsporus*
Aspiromitus pulcherrimus Steph. = *Phaeomegaceros fimbriatus*
Asterella cubanensis (Lehm. ex Mont.) Underw. = *Asterella elegans*
Aureolejeunea aurifera R.M.Schust. ≡ *Cheilolejeunea aurifera*
Aureolejeunea fulva R.M.Schust. = *Cheilolejeunea tonduzana*
Aureolejeunea quinquecarinata R.M.Schust. ≡ *Cheilolejeunea quinquecarinata*
Aureolejeunea tonduzana (Steph.) Gradst. ≡ *Cheilolejeunea tonduzana*
Aytonia intermedia (Lindenb. et Gottsche) Kuntze ≡ *Plagiochasma intermedium*
Bazzania arcuata (Lindenb. et Gottsche) Trevis. = *Bazzania hookeri* var. *hookeri*

Bazzania asperistipula (Steph.) Herzog = *Bazzania hookeri* var. *hookeri*
Bazzania breuteliana (Lindenb. et Gottsche) Trevis. = *Bazzania hookeri* var. *hookeri*
Bazzania chimborazensis f. *cellulis-apicalibus* Herzog nom. inval. = *Bazzania hookeri*
Bazzania chimborazensis Spruce = *Bazzania hookeri* var. *hookeri*
Bazzania conchophylla Herzog = *Bazzania hookeri*
Bazzania cubensis (Gottsche ex Steph.) Pagán ≡ *Bazzania pycnophylla* var. *cubensis*
Bazzania fendleri (Steph.) Fulford = *Bazzania jamaicensis*
Bazzania heteroclada Spruce = *Bazzania hookeri* var. *hookeri*
Bazzania heterostipa (Steph.) Fulford = *Bazzania nitida*
Bazzania jamaicensis var. *chamaecardia* Herzog = *Bazzania jamaicensis*
Bazzania latidens (Gottsche ex Steph.) Fulford = *Bazzania hookeri* var. *hookeri*
Bazzania liebmaniana (Lindenb. et Gottsche) Trevis. = *Bazzania stolonifera*
Bazzania longa (Nees) Trevis. = *Bazzania praerupta*
Bazzania portoricensis (Hampe et Gottsche) Steph. = *Bazzania hookeri*
Bazzania portoricensis var. *pycnodictyon* Herzog = *Bazzania hookeri*
Bazzania quadricrenata (Gottsche ex Steph.) Pagán = *Bazzania aurescens*
Bazzania robusta Spruce = *Bazzania falcata*
Bazzania schlimiana (Gottsche) Fulford = *Bazzania hookeri* var. *hookeri*
Bazzania stolonifera f. *defolians* (Herzog) Fulford nom. inval. = *Bazzania stolonifera*
Bazzania stolonifera f. *minor* (Herzog) Fulford nom. inval. = *Bazzania stolonifera*
Bazzania stolonifera f. *rufescens* (Herzog) Fulford nom. inval. = *Bazzania stolonifera*
Bazzania taleana (Gottsche) Fulford = *Bazzania affinis*
Bazzania teretiuscula (Lindenb. et Gottsche) Trevis. = *Bazzania hookeri* var. *hookeri*
Bazzania vincentiana (Lehm. et Lindenb.) Trevis. = *Bazzania stolonifera*
Bazzania vincentiana f. *defolians* Herzog nom. inval. = *Bazzania stolonifera*
Bazzania vincentiana f. *minor-ramulosa* Herzog nom. inval. = *Bazzania stolonifera*
Bazzania vincentiana f. *rufescens* Herzog nom. inval. = *Bazzania stolonifera*
Blepharostoma sandvicense (Mont.) Trevis. ≡ *Fuscocephaloziopsis connivens* subsp. *sandwicensis*
Bonneria granatensis (Gottsche) Fulford et J.Taylor ≡ *Paracromastigum granatense*
Brachiolejeunea acuta S.Winkl. = *Dicranolejeunea axillaris*
Brachiolejeunea corticalis (Lehm. et Lindenb.) Schiffn. ≡ *Frullanoides corticalis*
Brachiolejeunea densifolia (Raddi) A.Evans ≡ *Frullanoides densifolia*
Brachiolejeunea insularis A.Evans = *Frullanoides chinantlana*
Brachiolejeunea mamillata f. *brevifolia* Herzog nom. inval. = *Frullanoides mexicana*
Brachiolejeunea mamillata f. *obtusifolia* Herzog nom. inval. = *Frullanoides mexicana*
Brachiolejeunea mamillata f. *typica* Herzog nom. inval. = *Frullanoides mexicana*
Brachiolejeunea mamillata Steph. = *Brachiolejeunea leiboldiana*
Brachiolejeunea nitidiuscula (Gottsche) Steph. = *Blepharolejeunea incongrua*
Brachiolejeunea parva Herzog = *Frullanoides chinantlana*
Bryolejeunea diffusa (Sw.) Steph. nom. inval. ≡ *Bryopteris diffusa*
Bryolejeunea flaccida (Lindenb. et Hampe) Steph. nom. inval. = *Bryopteris filicina*
Bryolejeunea fruticulosa (Taylor) Steph. nom. inval. = *Bryopteris filicina*
Bryolejeunea tenuicaulis (Taylor ex Gottsche, Lindenb. et Nees) Steph. nom. inval. = *Bryopteris filicina*
Bryopteris brevis Steph. = *Bryopteris filicina*
Bryopteris filicina var. *fissiflora* Herzog ex Stotler et Crand.-Stotl. nom. inval. = *Bryopteris filicina*
Bryopteris filicina α hookeriana Gottsche, Lindenb. et Nees = *Bryopteris filicina*
Bryopteris flaccida Lindenb. et Hampe = *Bryopteris filicina*
Bryopteris fruticulosa f. *propagulifera* Herzog nom. inval. = *Bryopteris filicina*
Bryopteris fruticulosa subsp. *monoica* Stotler = *Bryopteris filicina*
Bryopteris fruticulosa Taylor = *Bryopteris filicina*
Bryopteris liebmaniana Lindenb. et Gottsche = *Bryopteris filicina*
Bryopteris longispica (Spruce) Steph. = *Bryopteris filicina*
Bryopteris tenuicaulis f. *flagellifera* Herzog = *Bryopteris filicina*
Bryopteris tenuicaulis Taylor ex Gottsche, Lindenb. et Nees = *Bryopteris filicina*
Bryopteris tenuicaulis var. *flagellifera* Herzog ex Standl. nom. inval. = *Bryopteris filicina*
Bryopteris trinitensis (Lehm. et Lindenb.) Lehm. et Lindenb. = *Bryopteris filicina*
Calobryum andinum (Spruce) Steph. = *Haplomitrium blumei*
Calypogeia caespitosa (Spruce) Steph. ≡ *Mnioloma caespitosum*
Calypogeia crenulata Bischl. ≡ *Mnioloma cellulosum*
Calypogeia cyclostipa (Spruce) Steph. ≡ *Mnioloma cyclostipum*
Calypogeia elliottii Steph. ≡ *Mnioloma elliottii*
Calypogeia heterophylla (Steph.) Steph. = *Calypogeia peruviana*
Calypogeia heterophylla var. *subrotunda* (Steph.) Bischl. =*Calypogeia peruviana*
Calypogeia rhynchophylla (Herzog) Bischl. ≡ *Mnioloma rhynchophyllum*
Calypogeia subrotunda Steph. = *Calypogeia peruviana*
Calyptrocolea pittieri (Steph.) R.M.Schust. ≡ *Adelanthus pittieri*

Campanocolea fragmentissima (R.M.Schust.) R.M.Schust. ≡ *Lophocolea fragmentissima*
Candollea simplex (Sw.) Raddi ≡ *Plagiochila simplex*
Cephalozia caribbeania Fulford = *Fuscocephaloziopsis crassifolia*
Cephalozia catenulata (Huebener) Lindb. ≡ *Fuscocephaloziopsis catenulata*
Cephalozia crassifolia (Lindenb. et Gottsche) Fulford ≡ *Fuscocephaloziopsis crassifolia*
Cephalozia curvifolia (Dicks.) Dumort. ≡ *Nowellia curvifolia*
Cephalozia dussii Fulford = *Cephalozia crossii*
Cephalozia granatensis J.B.Jack ex Steph. = *Cephaloziella fragillima*
Cephalozia lunulifolia (Dumort.) Dumort. ≡ *Fuscocephaloziopsis lunulifolia*
Cephalozia subforficata Herzog = *Fuscocephaloziopsis crassifolia*
Cephaloziella granatensis (J.B.Jack ex Steph.) Fulford = *Cephaloziella fragillima*
Ceratolejeunea brasiliensis (Gottsche) Steph. = *Ceratolejeunea fallax*
Ceratolejeunea corniculata Spruce ex Steph. = *Ceratolejeunea fallax*
Ceratolejeunea cubensis (Mont.) Steph. nom. inval. ≡ *Ceratolejeunea cubensis*
Ceratolejeunea deficiens Herzog = *Ceratolejeunea laetefusca*
Ceratolejeunea dentatocornuta Steph. = *Otigoniolejeunea huctumalcensis*
Ceratolejeunea dussiana (Steph.) G.Dauphin = *Otigoniolejeunea huctumalcensis*
Ceratolejeunea fastigiata (Spruce) Steph. = *Ceratolejeunea filaria*
Ceratolejeunea flagelliformis (Steph.) Fulford = *Ceratolejeunea filaria*
Ceratolejeunea fusilobula Herzog = *Ceratolejeunea fallax*
Ceratolejeunea guadalupensis Steph. = *Ceratolejeunea cubensis*
Ceratolejeunea integrifolia A.Evans = *Ceratolejeunea laetefusca*
Ceratolejeunea involvens (Nees et Mont.) Steph. = *Ceratolejeunea cornuta*
Ceratolejeunea lobata L.Clark = *Ceratolejeunea cornuta*
Ceratolejeunea longicornis (Gottsche) Steph. = *Ceratolejeunea filaria*
Ceratolejeunea maritima (Spruce) Steph. = *Ceratolejeunea cornuta*
Ceratolejeunea megalophysa (Spruce) Steph. = *Ceratolejeunea cornuta*
Ceratolejeunea multiocellata Herzog = *Ceratolejeunea filaria*
Ceratolejeunea plumula (Spruce) Steph. = *Ceratolejeunea coarina*
Ceratolejeunea schwaneckei Steph. = *Ceratolejeunea filaria*
Ceratolejeunea spinosa var. *costaricensis* Zwickel = *Ceratolejeunea filaria*
Ceratolejeunea spinosa var. *flagelliformis* Steph. = *Ceratolejeunea filaria*
Ceratolejeunea spruceana Zwickel = *Ceratolejeunea cornuta*
Ceratolejeunea valida A.Evans = *Ceratolejeunea cornuta*
Ceratolejeunea variabilis (Lindenb.) Pearson = *Ceratolejeunea cornuta*
Ceratolejeunea variabilis (Lindenb.) Steph. nom. inval. = *Ceratolejeunea cornuta*
Cheilolejeunea choachina (Gottsche) Gradst. = *Cheilolejeunea acutangula*
Cheilolejeunea clausa (Nees et Mont.) R.M.Schust. ≡ *Cheilolejeunea trifaria* var. *clausa*
Cheilolejeunea decidua (Spruce) A.Evans = *Cheilolejeunea adnata*
Cheilolejeunea decurviloba (Steph.) Xiao L.He ≡ *Pycnolejeunea decurviloba*
Cheilolejeunea fulva (R.M.Schust.) W.Ye et R.L.Zhu ex M.Wigginton nom. inval. = *Cheilolejeunea tonduzana*
Cheilolejeunea inflata Steph. = *Cheilolejeunea intertexta*
Cheilolejeunea melastomatis (Lindenb. et Gottsche) Steph. nom. inval. = *Lejeunea flava*
Cheilolejeunea oncophylla (Ångstr.) Grolle et M.E.Reiner = *Cheilolejeunea lobulata*
Cheilolejeunea phyllobola (Nees et Mont.) Schiffn. ≡ *Lejeunea phyllobola*
Cheilolejeunea pililoba (Spruce) A.Evans = *Lejeunea trinitensis*
Cheilolejeunea pililoba f. *varians* Herzog ≡ *Rectolejeunea pililoba* var. *varians*
Cheilolejeunea polyantha A.Evans = *Cheilolejeunea rigidula* var. *rigidula*
Chiloscyphus breutelii (Gottsche) J.J.Engel et R.M.Schust. = *Leptoscyphus orbignianus*
Chiloscyphus combinatus (Nees) Nees ≡ *Heteroscyphus combinatus*
Chiloscyphus connatus (Sw.) J.J.Engel et R.M.Schust. ≡ *Cryptolophocolea connata*
Chiloscyphus guadalupensis (Steph.) J.J.Engel et R.M.Schust. ≡ *Cryptolophocolea guadalupensis*
Chiloscyphus martianus (Nees) J.J.Engel et R.M.Schust. ≡ *Cryptolophocolea martiana*
Chiloscyphus muricatus (Lehm.) J.J.Engel et R.M.Schust. ≡ *Lophocolea muricata*
Chiloscyphus nigrescens Lindenb. et Hampe = *Clasmatocolea vermicularis*
Chiloscyphus obliquefolius Herzog ex Fulford nom. inval. = *Cryptolophocolea guadalupensis*
Chiloscyphus pittieri Steph. = *Leptoscyphus amphibolius*
Chiloscyphus quadridentatus (Spruce) J.J.Engel et R.M.Schust. = *Leptoscyphus orbignianus*
Chiloscyphus tricuspidatus (Herzog) J.J.Engel et R.M.Schust. ≡ *Lophocolea tricuspidata*
Chiloscyphus vermicularis (Lehm.) Hässel ≡ *Clasmatocolea vermicularis*
Cladopodiella intertexta (Gottsche) Fulford ≡ *Cephaloziopsis intertexta*
Cololejeunea aloba Herzog = *Cololejeunea camillii*
Cololejeunea clavatopapillata Steph. = *Cololejeunea jamesii*

Cololejeunea coseguinana L.Clark = *Myriocoleopsis minutissima* subsp. *minutissima*
Cololejeunea dauphinii (M.I.Morales et G.Dauphin) R.L.Zhu ≡ *Myriocoleopsis tixieri*
Cololejeunea elliptica (Steph.) S.W.Arnell nom. inval. = *Cololejeunea camillii*
Cololejeunea ensifolia f. *angustifolia* Herzog nom. inval. = *Cololejeunea diaphana*
Cololejeunea ensifolia f. *genuina* Herzog nom. inval. = *Cololejeunea diaphana*
Cololejeunea fefeana (Tixier) Tixier = *Cololejeunea cremersii*
Cololejeunea gradsteinii A.Lücking nom. inval. = *Cololejeunea linopteroides*
Cololejeunea manaosensis (Herzog) Herzog = *Cololejeunea subscariosa*
Cololejeunea minutissima (Sm.) Steph. ≡ *Myriocoleopsis minutissima*
Cololejeunea minutissima subsp. *myriocarpa* (Nees et Mont.) R.M.Schust. ≡ *Myriocoleopsis minutissima* subsp. *myriocarpa*
Cololejeunea papillifera (Herzog) R.M.Schust. nom. illeg. ≡ *Cololejeunea minutilobula*
Cololejeunea planifolia (A.Evans) R.M.Schust. = *Cololejeunea planissima* var. *planissima*
Cololejeunea scabriflora Gottsche ex Steph. = *Cololejeunea obliqua*
Cololejeunea tixieri M.I.Morales et G.Dauphin nom. illeg. ≡ *Myriocoleopsis tixieri*
Cololejeunea tonkinensis Steph. = *Cololejeunea lanciloba*
Cololejeunea verwimpii Tixier nom. inval. ≡ *Cololejeunea verwimpii*
Colura ceratophora (Nees) Trevis. = *Colura tenuicornis*
Colura clavigera (Gottsche ex Schiffn.) Jovet-Ast = *Macrocolura sagittistipula*
Colura longicornis (Gottsche) Trevis. = *Ceratolejeunea filaria*
Colura lyrata Steph. = *Macrocolura sagittistipula*
Colura tenuis Steph. = *Colura tenuicornis*
Crossotolejeunea controversa (Gottsche) Steph. ≡ *Lejeunea controversa*
Crossotolejeunea cristatella Gottsche ex Steph. = *Lejeunea acanthogona* var. *acanthogona*
Crossotolejeunea lindeniana Gottsche ex Steph. = *Lejeunea controversa*
Crossotolejeunea lindeniana var. *connivens* Herzog = *Lejeunea controversa*
Crossotolejeunea obtusiuscula Herzog = *Lejeunea controversa*
Crossotolejeunea prionocalyx (Gottsche ex Schiffn.) Steph. = *Lejeunea sporadica*
Crossotolejeunea rotundata S.Winkl. = *Lejeunea intricata*
Cryptochila grandiflora (Lindenb. et Gottsche) Grolle = *Syzygiella sonderi*
Cryptogynolejeunea costaricensis (Steph.) R.M.Schust. ≡ *Lejeunea reflexistipula* var. *costaricensis*
Cryptothallus hirsutus H.A.Crum ≡ *Aneura crumii*
Cyclolejeunea exigua Steph. = *Cyclolejeunea convexistipa*
Cyclolejeunea truncatula (Spruce) Steph. = *Cyclolejeunea convexistipa*
Cyrtolejeunea holostipa (Spruce) A.Evans ≡ *Cheilolejeunea holostipa*
Cyrtolejeunea saccatiloba (Steph.) Gradst. = *Lejeunea herminieri*
Cystolejeunea lineata (Lehm. et Lindenb.) A.Evans ≡ *Cheilolejeunea lineata*
Dendroceros canaliculatus Pagán ≡ *Nothoceros canaliculatus*
Dicranolejeunea longissima Steph. = *Dicranolejeunea axillaris*
Dicranolejeunea phyllorhiza (Nees) Schiffn. ≡ *Brachiolejeunea phyllorhiza*
Dicranolejeunea pulchella Herzog = *Acanthocoleus aberrans* var. *aberrans*
Dicranolejeunea saccata Steph. ≡ *Blepharolejeunea saccata*
Diplasiolejeunea brachyclada A.Evans = *Diplasiolejeunea cavifolia*
Diplasiolejeunea caribea Tixier = *Diplasiolejeunea pellucida*
Diplasiolejeunea costaricensis J.Eggers nom. inval. = *Diplasiolejeunea eggersii*
Diplasiolejeunea galloana Jovet-Ast = *Diplasiolejeunea brunnea*
Diplasiolejeunea inermis Tixier = *Diplasiolejeunea pellucida*
Diplasiolejeunea pellucida f. *malleiformis* (A.Evans) Herzog nom. inval. ≡ *Diplasiolejeunea malleiformis*
Diplasiolejeunea pellucida var. *malleiformis* A.Evans ≡ *Diplasiolejeunea malleiformis*
Diplasiolejeunea robertiana A.Lücking nom. inval. = *Diplasiolejeunea cavifolia*
Diplasiolejeunea rudolphiana Steph. = *Diplasiolejeunea unidentata*
Drepanolejeunea bidens f. *denticulata* Herzog nom. inval. = *Drepanolejeunea infundibulata*
Drepanolejeunea bidens Steph. nom. inval. = *Drepanolejeunea bidens*
Drepanolejeunea bispinulosa A.Evans = *Drepanolejeunea lichenicola*
Drepanolejeunea elegantissima Steph. = *Drepanolejeunea araucariae* var. *araucariae*
Drepanolejeunea fragilis (A.Evans) Bischl. nom. inval. = *Drepanolejeunea fragilis*
Drepanolejeunea subulata Steph. = *Drepanolejeunea anoplantha*
Drepanolejeunea tenuis (Nees) J.B.Jack et Steph. = *Drepanolejeunea angustifolia*
Drepanolejeunea tenuis (Nees) Steph. nom. inval. = *Drepanolejeunea angustifolia*
Drepanolejeunea trifida Steph. = *Drepanolejeunea crucianella*
Dumortiera hirsuta var. *glabrocapitata* Steph. nom. inval. = *Dumortiera hirsuta*
Dumortiera nepalensis (Taylor) Nees ≡ *Dumortiera hirsuta* subsp. *nepalensis*
Echinocolea asperrima (Spruce) R.M.Schust. ≡ *Lejeunea asperrima*

Echinocolea dilatata (A.Evans) R.M.Schust. = *Lejeunea subspathulata*
Eucalyx obovata (Nees) Breidl. ≡ *Solenostoma obovatum*
Euosmolejeunea beyrichii (Lindenb.) Steph. ≡ *Cheilolejeunea beyrichii*
Euosmolejeunea clausa (Nees et Mont.) A.Evans ≡ *Cheilolejeunea trifaria* var. *clausa*
Euosmolejeunea condensata (Spruce) Spruce ex Steph. ≡ *Cheilolejeunea condensata*
Euosmolejeunea duriuscula (Nees) Steph. = *Cheilolejeunea rigidula*
Euosmolejeunea opaca (Gottsche) Steph. = *Cheilolejeunea trifaria* var. *clausa*
Euosmolejeunea rigidula (Nees ex Mont.) Steph. ≡ *Cheilolejeunea rigidula*
Euosmolejeunea trifaria (Reinw., Blume et Nees) Steph. ≡ *Cheilolejeunea trifaria*
Fimbraria elegans Spreng. ≡ *Asterella elegans*
Fimbraria stahlii Steph. = *Asterella pringlei*
Fossombronia brasiliensis Steph. = *Fossombronia porphyrorhiza*
Frullania allionii Steph. = *Frullania ericoides*
Frullania arecae (Spreng.) Gottsche = *Frullania obscura*
Frullania arecae var. *spiniloba* (Steph.) Yuzawa ≡ *Frullania obscura* var. *spiniloba*
Frullania arietina Taylor ex Gottsche, Lindenb. et Nees = *Frullania rio-janeirensis* var. *rio-janeirensis*
Frullania atrata β subtilissima Nees ex Mont. ≡ *Frullania subtilissima*
Frullania atrosanguinea Taylor ex Spruce = *Frullania peruviana*
Frullania bicornistipula var. *bradeana* (Steph.) L.Clark et Svihla = *Frullania bicornistipula*
Frullania bradeana Steph. = *Frullania bicornistipula*
Frullania brasiliensis f. *spinuliflora* (Herzog) Herzog ex G.Dauphin nom. inval. = *Frullania brasiliensis*
Frullania bullatiflora Steph. = *Frullania macrocephala*
Frullania closterantha Spruce ≡ *Frullania intumescens* var. *closterantha*
Frullania cocosensis Steph. = *Frullania brasiliensis*
Frullania convoluta f. *intermedia* Herzog nom. inval. = *Frullania convoluta*
Frullania convoluta f. *typica* Herzog nom. inval. = *Frullania convoluta*
Frullania convoluta var. *ampliata* Herzog = *Frullania convoluta*
Frullania costaricensis Steph. = *Frullania macrocephala*
Frullania crinoidea Spruce ex Steph. = *Frullania atrata*
Frullania cucullata Lindenb. et Gottsche = *Frullania intumescens*
Frullania cylindrica Lehm. = *Frullania brasiliensis*
Frullania cylindrica var. *minor* Husn. nom. inval. = *Frullania brasiliensis*
Frullania decipiens (Steph.) Beauverd nom. illeg. = *Frullania kunzei*
Frullania dubia Lindenb. et Hampe = *Frullania intumescens*
Frullania ecuadorensis Steph. = *Frullania kunzei*
Frullania fallax Steph. nom. illeg. = *Frullania intumescens*
Frullania flexicaulis Spruce = *Frullania paradoxa*
Frullania fuscobrunnea (Steph.) Steph. = *Frullania intumescens*
Frullania fusiflora Steph. = *Frullania obscura* var. *obscura*
Frullania galapagona Steph. nom. illeg. = *Frullania kunzei*
Frullania gymnotis Nees et Mont. = *Frullania obcordata*
Frullania haeckeriana Lindenb. = *Frullania peruviana*
Frullania hians (Lehm. et Lindenb.) Lehm. et Lindenb. = *Frullania obscura* var. *obscura*
Frullania hilariana Mont. = *Frullania glomerata*
Frullania hondurae Herzog et L.Clark = *Frullania brasiliensis*
Frullania involuta Hampe ex Steph. = *Frullania uleana*
Frullania lacouturei Steph. = *Frullania brasiliensis*
Frullania longicollis Lindenb. et Gottsche = *Frullania intumescens*
Frullania macrorhyncha Herzog et L.Clark = *Frullania hamiflora*
Frullania megalostipa Spruce ≡ *Frullania rio-janeirensis* var. *megalostipa*
Frullania mucronata (Lehm. et Lindenb.) Lehm. et Lindenb. = *Frullania brasiliensis*
Frullania neesii Lindenb. = *Frullania kunzei*
Frullania nodulosa f. *brachyantha* Herzog nom. inval. = *Frullania nodulosa*
Frullania panamana Steph. = *Frullania brasiliensis*
Frullania parasitica Hampe = *Frullania obcordata*
Frullania patens Lindenb. = *Frullania brasiliensis*
Frullania pendulostyla Steph. = *Frullania mirabilis*
Frullania piliflora f. *subobtusis* Herzog nom. inval. = *Frullania peruviana*
Frullania piliflora Steph. = *Frullania peruviana*
Frullania piliflora var. *appendiculata* Herzog = *Frullania peruviana*
Frullania rabenhorstii Steph. = *Frullania grandifolia*
Frullania replicata (Nees) Mont. = *Frullania nodulosa*
Frullania robusta (Spruce) Spruce = *Frullania brasiliensis*
Frullania robusta f. *latioribus* Herzog nom. inval. = *Frullania brasiliensis*
Frullania robusta f. *spinuliflora* Herzog nom. inval. = *Frullania brasiliensis*
Frullania rufa Steph. = *Frullania brasiliensis*
Frullania sagittistipula Lindenb. et Gottsche = *Frullania breuteliana*
Frullania spiniloba Steph. ≡ *Frullania obscura* var. *spiniloba*
Frullania spruceana Steph. = *Frullania brasiliensis*
Frullania squarrosa (Mont.) Nees = *Frullania ericoides*
Frullania strobilantha Spruce = *Frullania macrocephala*
Frullania thuillieri Nees = *Frullania nodulosa*
Frullania tolimana Steph. = *Frullania gibbosa*
Frullania tuerckheimii Steph. = *Frullania montagnei*
Frullania virillana Steph. = *Frullania montagnei*
Frullanoides tristis (Steph.) van Slageren = *Frullanoides chinantlana*
Gymnomitrion andinum (Herzog) Herzog = *Gymnomitrion bolivianum*

Gymnomitrion andinum (Steph.) R.M.Schust. nom. illeg. = *Gymnomitrion bolivianum*
Haplomitrium andinum (Spruce) R.M.Schust. = *Haplomitrium blumei*
Haplozia linguifolia (Gottsche) Herzog = *Solenostoma amplexifolium*
Harpalejeunea aspera Grolle ex Gradst., D.G.Griffin, M.I.Morales et Nadkarni nom. inval. = *Harpalejeunea scabra*
Harpalejeunea heterodonta A.Evans = *Harpalejeunea tridens*
Harpalejeunea punctata (Herzog) S.W.Arnell = *Lepidolejeunea cuspidata*
Harpalejeunea sporadica (Besch. et Spruce) Steph. ≡ *Lejeunea sporadica*
Harpalejeunea subspathulata (Spruce) Steph. ≡ *Lejeunea subspathulata*
Herbertus angustifolius (Steph.) Herzog = *Herbertus pensilis*
Herbertus angustifolius f. *minor* Herzog nom. inval. = *Herbertus pensilis*
Herbertus bivittatus var. *latilobus* Herzog = *Herbertus bivittatus*
Herbertus cancerinus f. *foliis-minus-serratis* Herzog nom. inval. = *Herbertus acanthelius*
Herbertus cancerinus Herzog = *Herbertus acanthelius*
Herbertus costaricensis f. *brevifolius* Herzog nom. inval. = *Herbertus pensilis*
Herbertus costaricensis Steph. = *Herbertus pensilis*
Herbertus divergens (Steph.) Herzog = *Herbertus bivittatus*
Herbertus durandii var. *dissectus* Herzog nom. inval. = *Herbertus sendtneri*
Herbertus grossispinus (Steph.) Fulford = *Herbertus sendtneri*
Herbertus juniperinus (Sw.) Trevis. nom. illeg. = *Herbertus juniperoideus*
Herbertus juniperoideus subsp. *acanthelius* (Spruce) K.Feldberg et Heinrichs ≡ *Herbertus acanthelius*
Herbertus juniperoideus subsp. *bivittatus* (Spruce) K.Feldberg et Heinrichs ≡ *Herbertus bivittatus*
Herbertus juniperoideus subsp. *pensilis* (Taylor) K.Feldberg et Heinrichs ≡ *Herbertus pensilis*
Herbertus limbatus (Steph.) Herzog = *Herbertus acanthelius*
Herbertus pectinatus Herzog = *Herbertus acanthelius*
Herbertus penicillatus Herzog = *Herbertus bivittatus*
Herbertus serratus Spruce = *Herbertus acanthelius*
Herbertus stenoschizon Herzog = *Herbertus acanthelius*
Herbertus subdentatus (Steph.) Fulford = *Herbertus acanthelius*
Herbertus vulcanicola Herzog = *Herbertus acanthelius*
Heteroscyphus pittieri (Steph.) Schiffn. = *Leptoscyphus amphibolius*
Homalolejeunea robusta (Mitt.) Spruce ex Bonner nom. inval. ≡ *Marchesinia brachiata* var. *robusta*
Hygrolejeunea cerina (Lehm. et Lindenb.) Schiffn. ≡ *Lejeunea cerina*
Hygrolejeunea cerina (Lehm. et Lindenb.) Steph. nom. inval. ≡ *Lejeunea cerina*
Hygrolejeunea cordifissa (Taylor) Steph. ≡ *Lepidolejeunea cordifissa*
Hygrolejeunea costaricensis Steph. ≡ *Lejeunea reflexistipula* var. *costaricensis*
Hygrolejeunea elongella (Gottsche) Steph. ≡ *Lejeunea elongella*
Hygrolejeunea matteola (Spruce) Steph. = *Lejeunea anomala*
Hygrolejeunea ocellata Steph. = *Otigoniolejeunea huctumalcensis*
Hygrolejeunea phyllobola (Nees et Mont.) C.Massal. ≡ *Lejeunea phyllobola*
Hygrolejeunea phyllobola (Nees et Mont.) Steph. nom. inval. ≡ *Lejeunea phyllobola*
Hygrolejeunea punctata Herzog = *Lepidolejeunea cuspidata*
Hygrolejeunea rotundifolia (Mitt.) Steph. ≡ *Lejeunea rotundifolia*
Hygrolejeunea similis Steph. = *Lejeunea cerina*
Hygrolejeunea tonduzana Steph. ≡ *Lejeunea tonduzana*
Hygrophila irrigua (Wilson ex Hook.) Taylor = *Dumortiera hirsuta* subsp. *hirsuta*
Hypenantron elegans (Spreng.) Trevis. ≡ *Asterella elegans*
Hypoisotachis multiceps (Lindenb. et Gottsche) R.M.Schust. ex J.J.Engel et G.L.Merr. ≡ *Isotachis multiceps*
Isotachis haematodes (Lindenb. et Gottsche) Gottsche = *Isotachis serrulata*
Isotachis lindigiana Gottsche = *Isotachis serrulata*
Isotachis madida (Hook. et Taylor) Mitt. = *Isotachis humectata*
Isotachis madida auct. = *Isotachis serrulata*
Isotachis parva Steph. = *Isotachis multiceps*
Isotachis ripensis Spruce = *Triandrophyllum subtrifidum* var. *subtrifidum*
Isotachis ripensis var. *armata* Herzog = *Triandrophyllum subtrifidum* var. *trifidum*
Iwatsukia bifida (Fulford) R.M.Schust. ≡ *Odontoschisma bifidum*
Iwatsukia jishibae (Steph.) N.Kitag. ≡ *Odontoschisma jishibae*
Jamesoniella autumnalis (DC.) Steph. ≡ *Syzygiella autumnalis*
Jamesoniella colorata (Lehm.) Spruce ex Schiffn. ≡ *Syzygiella colorata*
Jamesoniella rubricaulis (Nees) Grolle ≡ *Syzygiella rubricaulis*
Jensenia erythropus (Gottsche) Grolle = *Jensenia spinosa*
Jubula bogotensis Steph. ≡ *Jubula hutchinsiae* subsp. *bogotensis*
Jubula costaricensis (Herzog) Herzog nom. inval. = *Jubula hutchinsiae* subsp. *bogotensis*
Jubula hutchinsiae var. *costaricensis* Herzog nom. inval. = *Jubula hutchinsiae* subsp. *bogotensis*
Jubula pennsylvanica subsp. *bogotensis* (Steph.) W.R.Guerke ≡ *Jubula hutchinsiae* subsp. *bogotensis*
Jungermannia amoena Lindenb. et Gottsche ≡ *Solenostoma amoenum*
Jungermannia amplexifolia (Hampe) Grolle ≡ *Solenostoma amplexifolium*
Jungermannia callithrix Lindenb. et Gottsche ≡ *Solenostoma callithrix*
Jungermannia colorata Lehm. ≡ *Syzygiella colorata*
Jungermannia elliptica var. *β laxa* Lehm. et Lindenb. = *Leptolejeunea elliptica*
Jungermannia erythrorhiza Lehm. et Lindenb. ≡ *Isotachis erythrorhiza*

Jungermannia fossombronioides Austin ≡ *Solenostoma fossombronioides*
Jungermannia gracillima Sm. ≡ *Solenostoma gracillimum*
Jungermannia linguifolia Gottsche = *Solenostoma amplexifolium*
Jungermannia rubra Gottsche ex Underw. ≡ *Solenostoma rubrum*
Jungermannia sphaerocarpa Hook. ≡ *Solenostoma sphaerocarpum*
Kurzia verrucosa (Steph.) Grolle ≡ *Kurzia capillaris* subsp. *apillaris* var. *verrucosa*
Leiocolea turbinata (Raddi) H.Buch ≡ *Mesoptychia turbinata*
Leioscyphus nigrescens (Lindenb. et Hampe) Steph. = *Clasmatocolea vermicularis*
Lejeunea acutifolia (Steph.) A.Lücking nom. inval. ≡ *Microlejeunea acutifolia*
Lejeunea acutifolia (Steph.) R.M.Schust. nom. inval. ≡ *Microlejeunea acutifolia*
Lejeunea autoica R.M.Schust. = *Lejeunea aphanes*
Lejeunea bicolor (Nees) Mont. = *Frullanoides densifolia* subsp. *densifolia*
Lejeunea bullata Taylor ≡ *Microlejeunea bullata*
Lejeunea caespitosa Lindenb. = *Lejeunea capensis*
Lejeunea caulicalyx (Steph.) M.E.Reiner et Goda = *Lejeunea glaucescens*
Lejeunea cephalandra Spruce = *Lejeunea phyllobola*
Lejeunea cordifissa Taylor ≡ *Lepidolejeunea cordifissa*
Lejeunea cristatella (Gottsche ex Steph.) Bern.-Lück. nom. inval. = *Lejeunea acanthogona* var. *acanthogona*
Lejeunea cristatella Gottsche ex Steph. = *Lejeunea intricata*
Lejeunea cristulata (Steph.) M.E.Reiner et Goda ≡ *Lejeunea acanthogona* var. *cristulata*
Lejeunea cristuliflora (Steph.) M.E.Reiner et Goda = *Lejeunea acanthogona* var. *cristulata*
Lejeunea drymophila Spruce = *Lejeunea adpressa*
Lejeunea elliottii Spruce = *Lejeunea sporadica*
Lejeunea elliptica (Lehm. et Lindenb.) Mont. ≡ *Leptolejeunea elliptica*
Lejeunea elliptica β laxa (Lehm. et Lindenb.) Gottsche = *Leptolejeunea elliptica*
Lejeunea epiphylla (Bischl.) Bern.-Lück. nom. inval. ≡ *Microlejeunea epiphylla*
Lejeunea erostrata (Steph.) M.E.Reiner et Goda = *Lejeunea acanthogona* var. *diversicuspis*
Lejeunea filipes Spruce = *Lejeunea aphanes*
Lejeunea halei H.Rob. = *Lejeunea capensis*
Lejeunea holostipa Spruce ≡ *Cheilolejeunea holostipa*
Lejeunea huctumalcensis Lindenb. et Gottsche ≡ *Otigoniolejeunea huctumalcensis*
Lejeunea lancifolia (Steph.) G.Dauphin nom. inval. = *Lejeunea osculatiana*
Lejeunea lepida Lindenb. et Gottsche = *Lejeunea laetevirens*
Lejeunea lusoria (Lindenb. et Gottsche) Prantl = *Lejeunea flaccida*
Lejeunea magnoliae Lindenb. et Gottsche = *Lejeunea adpressa*
Lejeunea maxonii (A.Evans) Xiao L.He = *Lejeunea deplanata* var. *deplanata*
Lejeunea obtusangula Spruce = *Lejeunea flaccida*
Lejeunea opaca Gottsche = *Cheilolejeunea trifaria* var. *clausa*
Lejeunea peruviana (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees ≡ *Cyclolejeunea peruviana*
Lejeunea piriflora Gottsche ex Pol. nom. inval. ≡ *Cheilolejeunea piriflora*
Lejeunea saccatiloba (Steph.) R.L.Zhu et W.Ye nom. illeg. = *Lejeunea herminieri*
Lejeunea tapajosensis Spruce = *Lejeunea parviloba*
Lejeunea tocoriensis (Steph.) Duss = *Odontolejeunea decemdentata*
Lejeunea ulicina (Taylor) Gottsche, Lindenb. et Nees ≡ *Microlejeunea ulicina*
Lejeunea ulicina subsp. *bullata* (Taylor) R.M.Schust. ≡ *Microlejeunea bullata*
Lejeunea venezuelana (R.M.Schust.) R.L.Zhu, W.Ye et Y.M.Wei nom. inval. ≡ *Lejeunea venezuelana*
Lejeunea versicolor (Lehm. et Lindenb.) Mitt. nom. inval. = *Thysananthus auriculatus*
Lepicolea pruinosa f. *laxior-complanata* Herzog nom. inval. = *Lepicolea pruinosa*
Lepicolea pruinosa f. *longissime-lacinulata* Herzog nom. inval. = *Lepicolea pruinosa*
Lepicolea pruinosa f. *spinuloso-lacinulata* Herzog nom. inval. = *Lepicolea pruinosa*
Lepidolejeunea ornata (H.Rob.) R.M.Schust. = *Lepidolejeunea cordifissa*
Lepidolejeunea punctata (Herzog) R.M.Schust. = *Lepidolejeunea cuspidata*
Lepidolejeunea spongia (Spruce) B.M.Thiers = *Lepidolejeunea sullivantii*
Lepidozia armata f. *cavifolia* Herzog nom. inval. = *Lepidozia armata*
Lepidozia caespitosa Spruce = *Lepidozia cupressina*
Lepidozia commutata Steph. = *Lepidozia patens*
Lepidozia costaricensis Steph. = *Lepidozia squarrosa*
Lepidozia durandii Steph. = *Lepidozia squarrosa*
Lepidozia granatensis f. *elatior* Steph. nom. inval. = *Paracromastigum granatense*
Lepidozia granatensis Gottsche ≡ *Paracromastigum granatense*
Lepidozia karstenii f. *angustisecta* Herzog nom. inval. = *Lepidozia armata*
Lepidozia karstenii f. *brevifissa* Herzog nom. inval. = *Lepidozia armata*
Lepidozia karstenii var. *standleyi* Herzog = *Lepidozia armata*
Lepidozia macropatens Herzog = *Lepidozia reptans*
Lepidozia moritziana Steph. = *Lepidozia brasiliensis*
Lepidozia muenchiana Steph. = *Lepidozia cupressina* subsp. *cupressina*
Lepidozia peruviensis Steph. = *Lepidozia dendritica*
Lepidozia wallisiana Steph. = *Lepidozia cupressina* subsp. *cupressina*

Leptocolea cardiocarpa (Mont.) A.Evans ≡ *Cololejeunea cardiocarpa*
Leptocolea planifolia A.Evans = *Cololejeunea planissima* var. *planissima*
Leptocolea scabriflora (Gottsche ex Steph.) A.Evans = *Cololejeunea obliqua*
Leptocolea standleyi Herzog ex Standl. nom. inval. = *Cololejeunea standleyi*
Leptolejeunea chrysophthalma Herzog = *Leptolejeunea moniliata*
Leptolejeunea foraminulosa Steph. = *Leptolejeunea epiphylla*
Leptolejeunea mexicana Bischl. = *Leptolejeunea convexistipa*
Leptolejeunea obovata Bischl. = *Leptolejeunea radicosa*
Leptolejeunea stenophylla (Lindenb. et Gottsche) Schiffn. = *Drepanolejeunea orthophylla* subsp. *orthophylla*
Leptolejeunea stenophylla (Lindenb. et Gottsche) Steph. nom. inval. = *Drepanolejeunea orthophylla* subsp. *orthophylla*
Leptolejeunea stenophylla f. *latifolia* Herzog nom. inval. = *Drepanolejeunea mosenii*
Leptoscyphus liebmanianus (Lindenb. et Gottsche) Mitt. = *Leptoscyphus porphyrius*
Leptoscyphus quadridentatus (Spruce) Grolle nom. inval. = *Leptoscyphus orbignianus*
Leptoscyphus trapezoïdes (Mont.) L.Söderstr. = *Leptoscyphus orbignianus*
Leucolejeunea nana S.Winkl. = *Cheilolejeunea conchifolia*
Leucolejeunea unciloba (Lindenb.) A.Evans ≡ *Cheilolejeunea unciloba*
Leucolejeunea xanthocarpa (Lehm. et Lindenb.) A.Evans ≡ *Cheilolejeunea xanthocarpa*
Leucosarmentum portoricense Fulford = *Paracromastigum pachyrhizum*
Lindigina liebmaniana (Lindenb. et Gottsche) Gottsche ≡ *Gongylanthus liebmanianus*
Lophocolea aberrans var. *costaricensis* Herzog = *Leptoscyphus amphibolius*
Lophocolea breutelii Gottsche = *Leptoscyphus orbignianus*
Lophocolea breutelii var. *robusta* Herzog ex Fulford nom. inval. = *Leptoscyphus orbignianus*
Lophocolea columbica Gottsche = *Leptoscyphus orbignianus*
Lophocolea connata (Sw.) Nees ex Mont. ≡ *Cryptolophocolea connata*
Lophocolea effusidens Steph. = *Leptoscyphus orbignianus*
Lophocolea epiphylla (Herzog) Herzog nom. inval. = *Cryptolophocolea martiana*
Lophocolea erosa Gradst. nom. inval. = *Lophocolea tenerrima*
Lophocolea granatensis Gottsche = *Cryptolophocolea connata*
Lophocolea guadalupensis Steph. ≡ *Cryptolophocolea guadalupensis*
Lophocolea liebmanniana var. *bisbifida* Herzog ex Standl. nom. inval. = *Lophocolea liebmanniana*
Lophocolea liebmanniana var. *martiana* (Nees) Herzog ex Standl. ≡ *Cryptolophocolea martiana*
Lophocolea martiana Nees ≡ *Cryptolophocolea martiana*
Lophocolea perissodonta (Spruce) Steph. ≡ *Cryptolophocolea martiana* var. *perissodonta*
Lophocolea perissodonta Spruce nom. inval. = *Cryptolophocolea martiana* var. *perissodonta*
Lophocolea quadridentata Spruce = *Leptoscyphus orbignianus*
Lophocolea trapezoïdes Mont. = *Leptoscyphus orbignianus*
Lopholejeunea cocosensis L.Clark = *Lopholejeunea eulopha*
Lopholejeunea muelleriana (Gottsche) Schiffn. = *Lopholejeunea nigricans*
Lopholejeunea sagrana (Mont.) Schiffn. nom. inval. = *Lophole-jeunea subfusca*
Lopholejeunea sagrana (Mont.) Steph. = *Lopholejeunea subfusca*
Lophozia incisa (Schrad.) Dumort. ≡ *Schistochilopsis incisa*
Lophozia jamesonii (Mont.) R.M.Schust. ≡ *Lophonardia jamesonii*
Lophozia laxifolia (Mont.) Grolle ≡ *Lophonardia laxifolia*
Lophozia longiflora (Nees) Schiffn. ≡ *Lophozia ventricosa* var. *longiflora*
Lophozia turbinata (Raddi) Steph. ≡ *Mesoptychia turbinata*
Macrocolura lyrata (Steph.) R.M.Schust. = *Macrocolura sagittistipula*
Macrolejeunea cerina (Lehm. et Lindenb.) Gradst. ≡ *Lejeunea cerina*
Macrolejeunea lancifolia (Steph.) Herzog = *Lejeunea osculatiana*
Macrolejeunea pallescens (Mitt.) Schiffn. ≡ *Lejeunea pallescens*
Macrolejeunea subsimplex (Mont. et Nees) Schiffn. = *Lejeunea cerina*
Macrolejeunea subsimplex f. *minor* Herzog nom. inval. = *Lejeu-nea cerina*
Macrolejeunea subsimplex f. *parvistipula* Herzog nom. inval. = *Lejeunea cerina*
Madotheca maxonii Herzog = *Porella leiboldii*
Madotheca muenchiana Steph. = *Porella leiboldii*
Madotheca subciliata Lehm. et Lindenb. = *Porella crispata*
Madotheca subciliata var. *endiviifolia* Herzog = *Porella crispata*
Madotheca swartziana (F.Weber) Lehm. ≡ *Porella swartziana*
Madotheca swartziana var. *decurrenti-spinulosa* Herzog = *Porella leiboldii*
Madotheca swartziana var. *guatemalensis* Herzog = *Porella swartziana*
Marchantia domingensis Lehm. et Lindenb. = *Marchantia palea-cea* subsp. *paleacea*
Marchantia latifolia Gray = *Marchantia polymorpha* subsp. *ruderalis*
Marchantia papillata subsp. *inflexa* (Nees et Mont.) R.M.Schust. ≡ *Marchantia inflexa*
Marchantia pittieri Steph. ex Bonner = *Marchantia chenopoda*
Marchesinia brachiata f. *dentata* Herzog nom. inval. = *Marche-sinia brachiata*
Marchesinia brachiata f. *intermedia* Herzog nom. inval. = *Marchesinia brachiata*
Marchesinia brachiata var. *saccata* (Steph.) Herzog = *Marche-sinia brachiata*

Marchesinia coniloba Steph. = *Frullanoides densifolia* subsp. *densifolia*
Marchesinia denticulata Steph. = *Marchesinia brachiata*
Marchesinia longirostris Herzog = *Marchesinia brachiata*
Marchesinia longirostris var. *rivularis* Herzog = *Marchesinia brachiata*
Marchesinia minor Herzog = *Marchesinia brachiata*
Marchesinia quadridens Steph. nom. illeg. = *Marchesinia brachiata* var. *robusta*
Marchesinia robusta (Mitt.) Schiffn. ≡ *Marchesinia brachiata* var. *robusta*
Marchesinia saccata Steph. = *Marchesinia brachiata*
Marchesinia trollii Herzog = *Marchesinia brachiata*
Marsupella lacerata (Steph.) Váňa = *Gymnomitrion bolivianum*
Marsupella miniata (Lindenb. et Gottsche) Grolle ≡ *Gymnomitrion miniatum*
Marsupella moralesae (Váňa) Váňa ≡ *Gymnomitrion moralesae*
Marsupella trollii Herzog = *Gymnomitrion bolivianum*
Marsupella truncatoapiculata (Herzog) Váňa ≡ *Gymnomitrion truncatoapiculatum*
Marsupidium latifolium R.M.Schust. = *Acrobolbus laxus*
Mastigobryum arcuatum Lindenb. et Gottsche = *Bazzania hookeri* var. *hookeri*
Mastigobryum asperistipulum Steph. = *Bazzania hookeri* var. *hookeri*
Mastigobryum brasiliense Gottsche et Lindenb. ≡ *Bazzania brasiliensis*
Mastigobryum jamaicense (Lehm. et Lindenb.) Gottsche, Lindenb. et Nees ≡ *Bazzania jamaicensis*
Mastigobryum portoricense Hampe et Gottsche = *Bazzania hookeri*
Mastigobryum stoloniferum (Sw.) Lindenb. et Gottsche ≡ *Bazzania stolonifera*
Mastigobryum sylvaticum Steph. nom. inval. = *Bazzania stolonifera*
Mastigobryum turkheimii Beauverd = *Bazzania stolonifera*
Mastigolejeunea auriculata (Wilson et Hook.) Steph. ≡ *Thysananthus auriculatus*
Mastigolejeunea crispula (Steph.) Steph. = *Thysananthus auriculatus* var. *auriculatus*
Mastigolejeunea dentilobula Herzog = *Caudalejeunea lehmanniana*
Mastigolejeunea innovans var. *parciflora* Herzog = *Thysananthus auriculatus*
Mastigolejeunea pittieri Steph. = *Thysananthus auriculatus*
Megaceros canaliculatus (Pagán) A.J.Shaw et Renzaglia ex J.C.Villarreal et N.Salazar ≡ *Nothoceros canaliculatus*
Megaceros cristosporus (Steph.) Steph. = *Nothoceros vincentianus*
Megaceros guatemalensis Steph. = *Nothoceros vincentianus*
Megaceros vincentianus (Lehm. et Lindenb.) Campb. ≡ *Nothoceros vincentianus*
Metzgeria angusta Steph. ≡ *Metzgeria albinea* var. *angusta*
Metzgeria australis Steph. = *Metzgeria leptoneura*
Metzgeria decipiens (C.Massal.) Schiffn. = *Metzgeria ciliata*
Metzgeria gigantea Steph. = *Metzgeria claviflora*
Metzgeria hamata Lindb. nom. illeg. = *Metzgeria procera*
Metzgeria innovans Steph. = *Metzgeria furcata*
Metzgeria papulosa Steph. = *Metzgeria leptoneura*
Metzgeria sandei Schiffn. = *Metzgeria leptoneura*
Metzgeria thomeensis Steph. = *Metzgeria leptoneura*
Metzgeria tuerckheimii Steph. = *Metzgeria leptoneura*
Microlejeunea colombiana Bischl. = *Microlejeunea capillaris*
Microlejeunea laetevirens (Nees et Mont.) A.Evans ≡ *Lejeunea laetevirens*
Microlejeunea monoica Bischl. = *Metalejeunea cucullata*
Microlejeunea perigonialis (Gottsche) Steph. ≡ *Lejeunea perigonialis*
Microlejeunea stricta (Gottsche, Lindenb. et Nees) Steph. = *Microlejeunea diversiloba*
Microlejeunea ulicina subsp. *bullata* (Taylor) R.M.Schust. ex Breil nom. inval. ≡ *Microlejeunea bullata*
Microlepidozia capillaris (Sw.) Fulford ≡ *Kurzia capillaris*
Microlepidozia flagellifera (Steph.) Fulford ≡ *Kurzia flagellifera*
Microlepidozia verrucosa (Steph.) Fulford ≡ *Kurzia capillaris* subsp. *capillaris* var. *verrucosa*
Mnioloma cyclostipa (Spruce) R.M.Schust. nom. illeg. ≡ *Mnioloma cyclostipum*
Monoclea gottschei subsp. *elongata* Gradst. et Mues = *Monoclea gottschei* subsp. *gottschei*
Monoclea gottschei subsp. *neotropica* Spörle, H.Becker, N.Salazar et M.P.Gupta nom. inval. = *Monoclea gottschei* subsp. *gottschei*
Neopotamolejeunea tenera (Sw.) M.E.Reiner ≡ *Lejeunea tenera*
Notoscyphus paramicola Herzog = *Syzygiella autumnalis*
Nowellia caribbeania Fulford = *Nowellia evansii*
Odontolejeunea calcarata (Mont.) Steph. = *Odontolejeunea lunulata*
Odontolejeunea decemdentata var. *tocoriensis* (Steph.) Herzog = *Odontolejeunea decemdentata*
Odontolejeunea longispica A.Evans = *Odontolejeunea decemdentata*
Odontolejeunea ovalis (Lindenb. et Gottsche) Gradst. nom. inval. ≡ *Cheilolejeunea ovalis*
Odontolejeunea sieberiana (Gottsche) Schiffn. = *Odontolejeunea lunulata*
Odontolejeunea tocoriensis Steph. = *Odontolejeunea decemdentata*
Odontoschisma brasiliense auct. non typus = *Odontoschisma variabile*
Odontoschisma cordifolium Steph. = *Odontoschisma denudatum* subsp. *denudatum*
Odontoschisma prostratum (Sw.) Trevis. = *Odontoschisma sphagni*
Odontoschisma stoloniferum (Lindenb. et Gottsche) Trevis. = *Odontoschisma sphagni*
Omphalanthus filiformis (Sw.) Nees ≡ *Cheilolejeunea filiformis*
Omphalanthus filiformis f. *ramis-veneris-elongatis* Herzog nom. inval. = *Cheilolejeunea filiformis*

Omphalanthus filiformis var. *platycoleus* (Herzog) Gradst. ≡ *Cheilolejeunea filiformis* var. *platycoleus*
Omphalanthus grandistipulus Steph. = *Cheilolejeunea filiformis*
Omphalanthus ovalis (Lindenb. et Gottsche) Gradst. ≡ *Cheilolejeunea ovalis*
Omphalanthus platycoleus Herzog ≡ *Cheilolejeunea filiformis* var. *platycoleus*
Omphalolejeunea filiformis (Sw.) Lacout. ≡ *Cheilolejeunea filiformis*
Oryzolejeunea antillana (R.M.Schust.) R.M.Schust. = *Lejeunea herminieri*
Oryzolejeunea grolleana Bernecker ≡ *Lejeunea grolleana*
Oryzolejeunea saccatiloba (Steph.) Gradst. = *Lejeunea herminieri*
Otigoniolejeunea quinqueumbonata var. *rotundata* Herzog ≡ *Lejeunea quinqueumbonata* var. *rotundata*
Pallavicinia wallisii J.B.Jack et Steph. ≡ *Jensenia wallisii*
Paracromastigum bifidum (Steph.) R.M.Schust. = *Paracromastigum pachyrhizum*
Paracromastigum portoricense (Fulford) A.V.Freire nom. inval. = *Paracromastigum pachyrhizum*
Peltolejeunea jackii (Prantl) Schiffn. ≡ *Cheilolejeunea jackii*
Peltolejeunea ovalis (Lindenb. et Gottsche) Schiffn. ≡ *Cheilolejeunea ovalis*
Phaeoceros fimbriatus (Gottsche) Gradst. ≡ *Phaeomegaceros fimbriatus*
Phaeoceros laevis var. *carolinianus* (Michx.) Augier nom. inval. ≡ *Phaeoceros carolinianus*
Phaeomegaceros fimbriatus (Gottsche) J.C.Villarreal et Renzaglia nom. inval. ≡ *Phaeomegaceros fimbriatus*
Phragmicoma guilleminiana Nees et Mont. ex Mont. = *Marchesinia brachiata* var. *brachiata*
Phragmicoma salvadorica Ångstr. = *Thysananthus auriculatus* var. *auriculatus*
Physantholejeunea portoricensis (Hampe et Gottsche) R.M.Schust. ≡ *Otigoniolejeunea portoricensis*
Physocolea elliptica Steph. = *Cololejeunea camillii*
Physocolea microloba Herzog ex Standl. nom. inval. = *Cololejeunea minutilobula*
Physocolea semidentata Steph. = *Cololejeunea obliqua*
Physocolea subscariosa (Spruce) Steph. ≡ *Cololejeunea subscariosa*
Plagiochila acanthoda Lindenb. et Gottsche = *Plagiochila stricta*
Plagiochila aliena f. *brevifolia* Herzog nom. inval. = *Plagiochila raddiana*
Plagiochila aliena f. *rupicola* Herzog ex Standl. nom. inval. = *Plagiochila raddiana*
Plagiochila aliena Gottsche = *Plagiochila raddiana*
Plagiochila alpina Gottsche = *Plagiochila aerea*
Plagiochila anderssonii Ångstr. = *Plagiochila raddiana*
Plagiochila angulifolia Steph. = *Plagiochila adianthoides*
Plagiochila arnelliana Steph. = *Plagiochila bifaria*
Plagiochila beauverdii Steph. = *Plagiochila macra*
Plagiochila bidens Gottsche = *Plagiochila tenuis*
Plagiochila bonplandii Gottsche = *Plagiochila laetevirens*
Plagiochila bradeana Steph. = *Plagiochila superba* var. *superba*
Plagiochila breuteliana var. *γ novo-granatensis* Gottsche = *Plagiochila breuteliana*
Plagiochila bryhnii var. *ecuadoriensis* Herzog ex Bonner nom. inval. = *Plagiochila deflexirama*
Plagiochila bryopteroides Spruce = *Plagiochila deflexirama*
Plagiochila bryopteroides var. *ecuadoriensis* Herzog nom. inval. = *Plagiochila deflexirama*
Plagiochila bursata (Lam.) Lindenb. nom. illeg. = *Plagiochila aerea*
Plagiochila bursata f. *amphigastriis-minimis-digitatis* Herzog nom. inval. = *Plagiochila aerea*
Plagiochila bursata f. *depauperata* Herzog ex Carl nom. inval. = *Plagiochila aerea*
Plagiochila bursata f. *intermedia* Herzog nom. inval. = *Plagiochila aerea*
Plagiochila bursata f. *pilistipula* Herzog nom. inval. = *Plagiochila aerea*
Plagiochila bursata f. *tenera* Herzog nom. inval. = *Plagiochila aerea*
Plagiochila bursata var. *fissistipula* Herzog nom. inval. = *Plagiochila aerea*
Plagiochila bursata var. *fissistipula* Herzog ex Carl nom. inval. = *Plagiochila aerea*
Plagiochila bursata var. *pilistipula* Herzog ex Carl nom. inval. = *Plagiochila aerea*
Plagiochila bursata var. *β minor* Lindenb. = *Plagiochila aerea*
Plagiochila bursata β minor Lindenb. = *Plagiochila aerea*
Plagiochila caudata Steph. = *Plagiochila laetevirens*
Plagiochila caudatodecurrens Herzog ex Carl nom. inval. = *Plagiochila raddiana*
Plagiochila chinantlana Gottsche = *Plagiochila punctata* var. *punctata*
Plagiochila choachina Gottsche = *Plagiochila punctata* var. *punctata*
Plagiochila choachina var. *plurispina* Herzog = *Plagiochila punctata* var. *punctata*
Plagiochila choachina var. *plurispina* Herzog ex Carl nom. inval. = *Plagiochila punctata* var. *punctata*
Plagiochila cobana Steph. = *Plagiochila rutilans*
Plagiochila columbica Gottsche = *Plagiochila alternans*
Plagiochila compressula (Nees) Lindenb. = *Plagiochila bifaria*
Plagiochila confundens f. *bipinnata* Herzog nom. inval. = *Plagiochila simplex*
Plagiochila confundens f. *densifolia* Herzog nom. inval. = *Plagiochila simplex*
Plagiochila confundens f. *densifolia* Herzog ex Carl nom. inval. = *Plagiochila simplex*
Plagiochila confundens Lindenb. ex Hampe et Gottsche = *Plagiochila simplex*
Plagiochila confundens var. *alpinoides* Herzog = *Plagiochila simplex*
Plagiochila confusa Steph. = *Plagiochila raddiana*

Plagiochila contingens f. *longifolia* Herzog nom. inval. = *Plagiochila superba* var. *superba*
Plagiochila contingens f. *minor* Herzog nom. inval. = *Plagiochila turgida*
Plagiochila contingens Gottsche = *Plagiochila macrostachya*
Plagiochila contorta Lindenb. et Hampe = *Plagiochila gymnocalycina*
Plagiochila crassiretis Herzog ex Carl nom. inval. = *Plagiochila macra*
Plagiochila crispatodecurrens Herzog = *Plagiochila raddiana*
Plagiochila crispula Nees = *Plagiochila corrugata*
Plagiochila cristata var. *integricrista* Herzog nom. inval. = *Plagiochila grandicrista*
Plagiochila cuneata var. *bicuspidata* (Gottsche) Herzog ≡ *Plagiochila bicuspidata*
Plagiochila cuneata var. *loriloba* (Herzog ex Carl) Herzog ≡ *Plagiochila loriloba*
Plagiochila densiflora Herzog ex Carl nom. inval. = *Plagiochila densiflora*
Plagiochila dilatata Steph. = *Plagiochila diversifolia*
Plagiochila dimorpha var. *ecuadorica* (Inoue) Heinrichs ≡ *Plagiochila ecuadorica*
Plagiochila distinctifolia f. *crassiretis* Herzog ex Carl nom. inval. = *Plagiochila distinctifolia*
Plagiochila distinctifolia f. *linearifolia* Herzog nom. inval. = *Plagiochila rutilans* var. *rutilans*
Plagiochila divaricata Lindenb. = *Plagiochila rutilans*
Plagiochila diversispina Steph. = *Plagiochila vincentina*
Plagiochila dotensis Herzog = *Plagiochila diversifolia*
Plagiochila dubia Lindenb. et Gottsche = *Plagiochila patula*
Plagiochila esmeraldana Steph. = *Plagiochila adianthoides*
Plagiochila exalata f. *brevifolia* Herzog = *Plagiochila breuteliana*
Plagiochila exalata Herzog = *Plagiochila breuteliana*
Plagiochila exalata Herzog ex Carl nom. inval. = *Plagiochila breuteliana*
Plagiochila exesa Lindenb. et Gottsche = *Plagiochila bifaria*
Plagiochila fallax Lindenb. et Hampe = *Plagiochila patula*
Plagiochila flaccida Lindenb. = *Plagiochila macrostachya*
Plagiochila florida Spruce = *Plagiochila montagnei*
Plagiochila funkiana Steph. = *Plagiochila raddiana*
Plagiochila funkiana var. *trilaciniata* Herzog = *Plagiochila macra*
Plagiochila geniculata Lindenb. = *Plagiochila bifaria*
Plagiochila gibbosa f. *cellulis-magis-incrass* Herzog ex Carl nom. inval. = *Plagiochila adianthoides*
Plagiochila gibbosa Lindenb. et Gottsche = *Plagiochila adianthoides*
Plagiochila granatensis Gottsche = *Plagiochila trichostoma*
Plagiochila grandifolia Steph. = *Plagiochila alternans*
Plagiochila guilleminiana Mont. ex Lindenb. = *Plagiochila raddiana*
Plagiochila heterophylla Lindenb. = *Plagiochila macra*
Plagiochila heterophylla Müll.Berol. nom. inval. = *Plagiochila macra*
Plagiochila heterophylla var. *beauverdii* (Steph.) Heinrichs = *Plagiochila macra*
Plagiochila hondurensis (Herzog ex Carl) Herzog nom. inval. = *Plagiochila subplana*
Plagiochila hondurensis Herzog ex Carl = *Plagiochila subplana*
Plagiochila hondurensis Herzog ex Standl. nom. inval. = *Plagiochila subplana*
Plagiochila hypnoides f. *minor* Herzog ex Carl nom. inval. = *Plagiochila montagnei*
Plagiochila hypnoides f. *propagulifera* Herzog nom. inval. = *Plagiochila montagnei*
Plagiochila hypnoides var. *brevifolia* Herzog = *Plagiochila montagnei*
Plagiochila hypnoides var. *brevifolia* Herzog ex Carl nom. inval. = *Plagiochila montagnei*
Plagiochila hypnoides Willd. ex Lindenb. = *Plagiochila montagnei*
Plagiochila implexa f. *minor* Herzog nom. inval. = *Plagiochila bifaria*
Plagiochila implexa f. *minor* Herzog ex Carl nom. inval. = *Plagiochila bifaria*
Plagiochila implexa Lindenb. et Gottsche = *Plagiochila bifaria*
Plagiochila insularis Steph. nom. inval. = *Plagiochila raddiana*
Plagiochila integricrista Herzog = *Plagiochila grandicrista*
Plagiochila interjecta Gottsche = *Plagiochila patula*
Plagiochila jaramilloi H.Rob. = *Plagiochila bifaria*
Plagiochila jelskii Loitl. = *Plagiochila fuscolutea*
Plagiochila jovoënsis Steph. = *Plagiochila crispabilis*
Plagiochila kegeliana Steph. = *Plagiochila subplana*
Plagiochila kroneana Steph. = *Plagiochila laetevirens*
Plagiochila laxa Lehm. et Lindenb. ≡ *Acrobolbus laxus*
Plagiochila leptodictyon (Herzog ex Carl) Herzog nom. inval. = *Plagiochila subplana*
Plagiochila leptodictyon Herzog ex Carl = *Plagiochila subplana*
Plagiochila longaeva Herzog = *Plagiochila turgida*
Plagiochila longaeva Herzog ex Carl nom. inval. = *Plagiochila turgida*
Plagiochila ludoviciana Sull. = *Plagiochila raddiana*
Plagiochila martiana (Nees) Lindenb. = *Plagiochila patula*
Plagiochila micropteryx Gottsche = *Plagiochila laetevirens*
Plagiochila miqueliana Lehm. et Lindenb. = *Plagiochila distinctifolia*
Plagiochila moritziana Lindenb. et Gottsche ≡ *Plagiochila rutilans* var. *moritziana*
Plagiochila oresitropha f. *minor* Herzog ex Carl nom. inval. = *Plagiochila heteromalla*
Plagiochila oresitropha Spruce = *Plagiochila heteromalla*
Plagiochila panamensis Inoue = *Plagiochila bifaria*
Plagiochila parcispina Herzog = *Plagiochila superba* var. *superba*
Plagiochila parvistipula Lindenb. = *Plagiochila bunburii*
Plagiochila patentissima Lindenb. = *Plagiochila crispabilis*
Plagiochila patzschkei Steph. = *Plagiochila punctata* var. *punctata*
Plagiochila permista Spruce = *Plagiochila trichostoma*
Plagiochila permista var. *subintegerrima* Herzog = *Plagiochila retrorsa*

Plagiochila pichinchensis Taylor = *Plagiochila superba* var. *superba*
Plagiochila pinnata Spruce = *Plagiochila bifaria*
Plagiochila pinnata Steph. nom. illeg. ≡ *Plagiochila costariensis*
Plagiochila platyphylla Herzog ex Carl nom. inval. = *Plagiochila platyphylla*
Plagiochila procera Lindenb. = *Plagiochila adianthoides*
Plagiochila prostrata Steph. = *Plagiochila pittieri*
Plagiochila quelchii Steph. = *Plagiochila superba* var. *superba*
Plagiochila rhombifolia Steph. = *Plagiochila diversifolia*
Plagiochila rigidula Lindenb. et Gottsche = *Plagiochila patula*
Plagiochila ruficaulis Steph. = *Plagiochila breuteliana*
Plagiochila schlimiana Gottsche = *Plagiochila raddiana*
Plagiochila secundidens Steph. ex Dugas = *Plagiochila adianthoides*
Plagiochila secundifolia Lindenb. et Hampe = *Plagiochila cristata*
Plagiochila silvatica Gottsche = *Plagiochila raddiana*
Plagiochila sinuata Gottsche = *Plagiochila disticha*
Plagiochila solox Steph. = *Plagiochila laetevirens*
Plagiochila speciosa Lindenb. et Gottsche = *Plagiochila raddiana*
Plagiochila spinifera Ångstr. = *Plagiochila bifaria*
Plagiochila standleyi Herzog ex Carl ≡ *Plagiochila rutilans* var. *standleyi*
Plagiochila stolonifera Lindenb. et Gottsche = *Plagiochila punctata* var. *punctata*
Plagiochila subatra Steph. = *Plagiochila raddiana*
Plagiochila subatra var. *longidecurrens* Herzog = *Plagiochila raddiana*
Plagiochila subbiloba Herzog = *Plagiochila amicta*
Plagiochila subcristata Gottsche = *Plagiochila raddiana*
Plagiochila subglaucescens Herzog = *Plagiochila diversifolia*
Plagiochila subglaucescens Herzog ex Carl nom. inval. = *Plagiochila diversifolia*
Plagiochila subtrinitensis Herzog = *Plagiochila deflexa*
Plagiochila subturgida Herzog ex Carl nom. inval. = *Plagiochila canelensis*
Plagiochila subviminea f. *paramicola* Herzog = *Adelanthus lindenbergianus*
Plagiochila subviminea Steph. = *Adelanthus lindenbergianus*
Plagiochila subviminea var. *paramicola* Herzog ex Carl nom. inval. = *Adelanthus lindenbergianus*
Plagiochila sylvicultrix Spruce = *Plagiochila heteromalla*
Plagiochila tocarema Gottsche = *Plagiochila laetevirens*
Plagiochila tricarinata Carl = *Plagiochila retrorsa*
Plagiochila trilaciniata Herzog ex Carl = *Plagiochila macra*
Plagiochila tuerckheimii Steph. = *Plagiochila subplana*
Plagiochila umbrosa Steph. nom. illeg. = *Plagiochila simplex*
Plagiochila verapazana Steph. = *Plagiochila superba* var. *superba*
Plagiochila verruculosa R.M.Schust. = *Plagiochila papillifolia*
Plagiochila vincentina f. *minor* Herzog nom. inval. = *Plagiochila vincentina*
Plagiochila vincentina f. *minor* Herzog ex Carl nom. inval. = *Plagiochila vincentina*
Plagiochila virens Spruce = *Plagiochila dominicensis*
Plagiochila viridis Steph. = *Plagiochila deflexirama*
Platylejeunea pogonoptera (Spruce) A.Evans = *Symbiezidium barbiflorum*
Porella alpina (Lindenb. et Gottsche) Trevis. = *Porella leiboldii*
Porella arborea (Taylor) Trevis. = *Porella crispata*
Porella complanata (Steph.) Swails = *Porella swartziana*
Porella liebmaniana (Lindenb. et Gottsche) Trevis. = *Porella leiboldii*
Porella maxonii (Herzog) Swails = *Porella leiboldii*
Porella sharpii Swails = *Porella swartziana*
Preissia quadrata (Scop.) Nees ≡ *Marchantia quadrata*
Prionolejeunea aequitexta A.Evans = *Prionolejeunea denticulata*
Prionolejeunea crenulata Steph. = *Cyclolejeunea luteola*
Prionolejeunea fabroniifolia (Spruce) Schiffn. nom. inval. = *Prionolejeunea schlimiana*
Prionolejeunea innovata A.Evans = *Prionolejeunea denticulata*
Prionolejeunea macrocardia (Spruce) Steph. = *Prionolejeunea denticulata*
Prionolejeunea mucronata f. *minutissima* Herzog = *Prionolejeunea muricatoserrulata*
Ptychocoleus heterophyllus A.Evans ≡ *Acrolejeunea heterophylla*
Ptychocoleus juliformis (Nees) Trevis. = *Archilejeunea fuscescens*
Ptychocoleus polycarpus (Nees) Trevis. ≡ *Schiffneriolejeunea polycarpa*
Ptychocoleus reflexus S.Winkl. = *Brachiolejeunea laxifolia*
Ptychocoleus torulosus (Lehm. et Lindenb.) Trevis. ≡ *Acrolejeunea torulosa*
Ptychocoleus torulosus f. *parvistipulus* Herzog = *Frullanoides corticalis*
Pycnolejeunea adnata (Kunze ex Lehm.) Steph. ≡ *Cheilolejeunea adnata*
Pycnolejeunea cocosana (Steph.) Mizut. = *Otigoniolejeunea huctumalcensis*
Pycnolejeunea densistipula var. *dubia* Herzog = *Pycnolejeunea densistipula*
Pycnolejeunea parvilobula Herzog ex Zwickel = *Pycnolejeunea densistipula*
Radula affinis Lindenb. et Gottsche = *Radula quadrata*
Radula amazonica Spruce = *Radula javanica*
Radula andicola Steph. = *Radula quadrata*
Radula boryana (F.Weber) Nees ex Mont. ≡ *Cladoradula boryana*
Radula boryana auct. amer. ≡ *Radula gottscheana*
Radula cornucopiae Spruce = *Radula episcia*
Radula elegans Steph. = *Radula javanica*
Radula falcifolia Steph. = *Radula javanica*
Radula frondescens Steph. = *Radula xalapensis*
Radula guatemalensis Steph. = *Radula portoricensis*
Radula kegelii Gottsche ex Steph. = *Radula pallens*
Radula lindigii Castle = *Radula mammosa*
Radula macrostachya Lindenb. et Gottsche = *Radula javanica*
Radula mollis Lindenb. et Gottsche = *Radula quadrata*
Radula montana Steph. = *Radula sinuata*
Radula pallens var. *flaccida* Steph. ex Castle nom. inval. = *Radula subinflata*
Radula ramulina Taylor = *Radula voluta*

Radula subsimplex Steph. = *Radula pallens*
Radula surinamensis Steph. = *Radula javanica*
Rectolejeunea berteroana (Gottsche ex Steph.) A.Evans = *Rectolejeunea versifolia*
Rectolejeunea brittoniae A.Evans = *Lejeunea phyllobola*
Rectolejeunea concava (Lindenb. et Gottsche) Steph. ≡ *Lejeunea concava*
Rectolejeunea defolians Herzog = *Lejeunea parviloba*
Rectolejeunea maxonii A.Evans = *Lejeunea deplanata* var. *deplanata*
Rectolejeunea melastomatis (Lindenb. et Gottsche) Steph. = *Lejeunea flava*
Rectolejeunea phyllobola (Nees et Mont.) A.Evans ≡ *Lejeunea phyllobola*
Rectolejeunea pililoba (Spruce) R.M.Schust. = *Lejeunea trinitensis*
Riccardia amazonica (Spruce) Schiffn. ex Gradst. et Hekking = *Riccardia regnellii*
Riccardia andina (Spruce) Herzog = *Riccardia fucoidea*
Riccardia cervicornis (Spruce) Herzog nom. inval. = *Riccardia poeppigiana*
Riccardia cervicornis (Spruce) Herzog ex Gradst. et Hekking = *Riccardia poeppigiana*
Riccardia metzgeriiformis (Steph.) R.M.Schust. = *Riccardia digitiloba*
Riccardia pinguis (L.) Gray ≡ *Aneura pinguis*
Riccardia plumiformis (Spruce) Hässel ex Meenks = *Riccardia fucoidea*
Riccardia sprucei (Steph.) Meenks et C.De Jong = *Riccardia hymenophytoides*
Riccia stenophylla Spruce = *Riccia oerstediana*
Ricciella oerstediana (Lindenb. et Hampe) Müll.Hal. ≡ *Riccia oerstediana*
Ruizanthus lopezii R.M.Schust. ≡ *Isotachis lopezii*
Scapania portoricensis f. *gemmipara* Herzog nom. inval. = *Scapania portoricensis*
Scapania portoricensis f. *grossealata* Herzog = *Scapania portoricensis* var. *portoricensis*
Scapania portoricensis var. *typica* Herzog nom. inval. = *Scapania portoricensis* var. *portoricensis*
Schisma costaricensis (Steph.) Steph. = *Herbertus pensilis*
Schisma divergens Steph. = *Herbertus bivittatus*
Schisma durandii Steph. ≡ *Herbertus durandii*
Schisma vulcanicum Warnst. = *Herbertus acanthelius*
Schusteria tonduzana (Steph.) Kachroo = *Lejeunea tonduzana*
Solenostoma costaricanum Bakalin = *Solenostoma amoenum*
Solenostoma linguifolium (Gottsche) R.M.Schust. = *Solenostoma amplexifolium*
Steereochila ecuadorica Inoue ≡ *Plagiochila ecuadorica*
Stenolejeunea apiculata (Sande Lac.) R.M.Schust. ≡ *Lejeunea apiculata*
Stictolejeunea herzogii Buchloh ≡ *Luteolejeunea herzogii*
Stictolejeunea kunzeana (Gottsche, Lindenb. et Nees) Schiffn. = *Stictolejeunea squamata*
Stictolejeunea kunzeana (Gottsche, Lindenb. et Nees) Steph. nom. inval. = *Stictolejeunea squamata*
Stictolejeunea squamata var. *macrior* (Spruce) Herzog = *Stictolejeunea squamata*
Stylolejeunea trinitensis (Lindenb.) Fulford ≡ *Lejeunea trinitensis*
Symbiezidium cordistipulum Steph. = *Symbiezidium transversale* var. *transversale*
Symbiezidium grandifolium Steph. = *Symbiezidium transversale* var. *transversale*
Symbiezidium laceratum A.Evans = *Symbiezidium transversale* var. *hookerianum*
Symbiezidium pogonopterum (Spruce) Steph. = *Symbiezidium barbiflorum*
Symbiezidium setosum (Steph.) Steph. = *Symbiezidium barbiflorum*
Symbiezidium subrotundum (Hook.) Trevis. = *Symbiezidium transversale*
Symbiezidium taeniopsis (Spruce) Fulford = *Symbiezidium transversale* var. *hookerianum*
Symbiezidium vincentinum (Gottsche) Trevis. = *Symbiezidium transversale* var. *hookerianum*
Syzygiella apiculata Herzog = *Syzygiella macrocalyx*
Syzygiella appendiculata Herzog = *Syzygiella concreta*
Syzygiella gracillima Herzog = *Syzygiella perfoliata*
Syzygiella liberata Inoue = *Syzygiella trigonifolia*
Syzygiella longifolia Steph. = *Syzygiella concreta*
Syzygiella pectiniformis Spruce nom. inval. = *Syzygiella pectiniformis*
Syzygiella tonduzana f. *depauperata* Herzog nom. inval. = *Syzygiella tonduzana*
Syzygiella tonduzana f. *setulosa* Herzog ex Carl = *Syzygiella tonduzana*
Syzygiella tonduzana var. *setulosa* (Herzog ex Carl) Herzog = *Syzygiella tonduzana*
Szweykowskia cucullifolia (J.B.Jack et Steph.) Gradst. et M.E.Reiner ≡ *Plagiochila cucullifolia*
Taxilejeunea asthenica (Spruce) Steph. ≡ *Lejeunea asthenica*
Taxilejeunea auriculata Steph. = *Lejeunea rotundifolia*
Taxilejeunea bidentula Herzog nom. inval. = *Lejeunea debilis*
Taxilejeunea caracensis (Lindenb.) Schiffn. ≡ *Lejeunea caracensis*
Taxilejeunea carinata Herzog = *Lejeunea anomala*
Taxilejeunea debilis (Lehm. et Lindenb.) Steph. ≡ *Lejeunea debilis*
Taxilejeunea isocalycina (Nees) Steph. = *Lejeunea serpillifolioides*
Taxilejeunea laevicalyx (Gottsche) Steph. ≡ *Lejeunea laevicalyx*
Taxilejeunea lancifolia Steph. = *Lejeunea osculatiana*
Taxilejeunea lusoria (Lindenb. et Gottsche) Steph. = *Lejeunea flaccida*
Taxilejeunea obtusangula (Spruce) A.Evans = *Lejeunea flaccida*
Taxilejeunea peruviana Steph. = *Lejeunea pallescens*
Taxilejeunea pterigonia (Lehm. et Lindenb.) Steph. ≡ *Lejeunea pterigonia*
Taxilejeunea pterigonia f. *perianthio-minus-ornato* Herzog nom. inval. = *Lejeunea pterigonia*

Taxilejeunea serpillifolioides (Raddi) D.P.Costa ≡ *Lejeunea serpillifolioides*
Taxilejeunea standleyi Herzog = *Lejeunea flaccida*
Taxilejeunea sulphurea (Lehm. et Lindenb.) Steph. ≡ *Lejeunea sulphurea*
Taxilejeunea tonduzana Steph. = *Lejeunea tonduzana*
Thysananthus evansii Fulford ≡ *Fulfordianthus evansii*
Thysananthus pterobryoides (Spruce) Schiffn. ≡ *Fulfordianthus pterobryoides*
Thysanolejeunea pterobryoides (Spruce) Steph. ≡ *Fulfordianthus pterobryoides*
Trachylejeunea aquarius (Spruce) A.Evans ≡ *Xylolejeunea aquarius*
Trachylejeunea inflexa (Hampe) Steph. ≡ *Cheilolejeunea inflexa*
Triandrophyllum trifidum (Gottsche) Fulford et Hatcher ≡ *Triandrophyllum subtrifidum* var. *trifidum*
Trichocolea argentea Herzog ≡ *Leiomitra argentea*
Trichocolea brevifissa Steph. ≡ *Leiomitra brevifissa*
Trichocolea cristacastrensis Spruce ex Steph. = *Leiomitra tomentosa*
Trichocolea elliottii Steph. ≡ *Leiomitra elliottii*
Trichocolea flaccida (Spruce) Spruce ≡ *Leiomitra flaccida*
Trichocolea floccosa Herzog et Hatcher = *Leiomitra sprucei*
Trichocolea inaequalis Steph. = *Leiomitra flaccida*
Trichocolea paraphyllina (Spruce) Steph. ≡ *Leiomitra paraphyllina*
Trichocolea patula Steph. = *Leiomitra flaccida*
Trichocolea sprucei (Spruce) Steph. = *Leiomitra sprucei*
Trichocolea tomentosa (Sw.) Gottsche ≡ *Leiomitra tomentosa*
Tylimanthus approximatus (Lindenb.) Besch. = *Acrobolbus laxus*
Tylimanthus jamaicensis Steph. = *Acrobolbus laxus*
Tylimanthus laxus (Lehm. et Lindenb.) Spruce ≡ *Acrobolbus laxus*
Tylimanthus pittieri Steph. ≡ *Adelanthus pittieri*

References

Abeywickrama, B. A. 1959. The genera of liverworts of Ceylon. *Ceylon Journal of Science, Biological Sciences* 2(1): 33–81.

Acharius, E. 1805. *Jungermannia violacea*, eine neue Art aus Dusky Bay. *Beitr. Naturk.* 1: 76–78. https://doi.org/10.5962/bhl.title.45015

Acosta-Mercado D., N. Cancel-Morales, and J. D. Chinea, C. J. Santos-Flores, and I. Sastre de Jesús. 2012. Could the canopy structure of bryophytes serve as an indicator of microbial biodiversity? A test for testate amoebae and microcrustaceans from a subtropical cloud forest in Dominican Republic. *Microbial Ecology* 64(1): 200–213. https://doi.org/10.1007/s00248-011-0004-8

Adanson, M. 1763. *Familles des plantes, II partie.* Vincent, Paris, 640 pp. https://doi.org/10.5962/bhl.title.271

Ahonen, I. 2004. Molecular phylogeny of the liverwort order Porellales (Marchantiophyta, Jungermanniopsida). *Monographs in Systematic Botany from the Missouri Botanical Garden* 98: 168–188.

Ahonen, I. 2006. The taxonomic position of the genus *Nipponolejeunea* Hatt. *Journal of the Hattori Botanical Laboratory* 99: 319–342. https://doi.org/10.18968/jhbl.99.0_319

Aide, M. T., M. L. Clark, H. R. Grau, D. López-Carr, M. A. Levy, D. Redo, M. Bonilla-Moheno, G. Riner, M. J. Andrade-Núñez, and M. Muñiz. 2012. Deforestation and Reforestation of Latin America and the Caribbean (2001–2010). *Biotropica* 45(2): 262–271. https://doi.org/10.1111/j.1744-7429.2012.00908.x

Alam, A., and S. C. Srivastava. 2009. Liverwort diversity in Palni Hills (Tamil Nadu), India – a checklist. *Nelumbo* 51: 99–122.

Aleffi, M., and R. Schumacker. 1995. Check-list and red-list of the liverworts (Marchantiophyta) and hornworts (Anthocerotophyta) of Italy. *Flora Mediterranea 5*: 73–161. https://www.herbmedit.org/flora/5-073.pdf

Allorge, V., and S. Jovet-Ast. 1955. *Cololejeunea azorica* V. All. et Jovet-Ast, Lejeunéacée nouvelle de l'Île San Miguel. *Mitteilungen der Thüringischen Botanischen Gesellschaft* 1(2/3): 17–22.

Alonso-García, M., J. C. Villarreal, K. D. McFarland, and B. Goffinet. 2020. Population genomics and phylogeography of a clonal bryophyte with spatially separated sexes and extreme sex ratios. *Frontiers in Plant Science* 11(495): 1–15. https://doi.org/10.3389/fpls.2020.00495

Alvarenga, L. D., J. R. Oliveira, M. P. Silva, D. P. Costa, and K. C. Pôrto. 2008. Liverworts of Alagoas State, Brazil [Hepáticas do Estado de Alagoas, Brasil]. *Acta Botanica Brasilica* 22(3): 878–890. https://doi.org/10.1590/S0102-33062008000300023

Álvaro, W. R. 2011. *Revisión taxonómica del género* Anastrophyllum *(Spruce) Steph. (Marchantiophyta, Jungermanniaceae) para Colombia.* Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, 98 pp.

Álvaro, W. R., and J. Uribe. 2017. Revisión taxonómica del género *Anastrophyllum* (Marchantiophyta, Anastrophyllaceae) para Colombia [Taxonomic revision of the genus *Anastrophyllum* (Marchantiophyta, Anastrophyllaceae) of Colombia]. *Caldasia* 39(2): 269–291. https://doi.org/10.15446/caldasia.v39n2.63100

Amélio, L. A. 2018. *Circunscrição e Filogenia de* Notothylas *Sull. (Notothyladaceae, Anthocerotophyta).* Instituto de Botânica da Secretaria do Meio Ambiente, São Paulo, 86 pp. https://smastr16.blob.core.windows.net/pgibt/2018/12/leandro_de_almeida_amelio.pdf

Amélio, L. A., A. M. Souza, D. F. Peralta, and E. B. Valente. 2021. A taxonomic review of Brazilian *Dendroceros* Nees (Dendrocerotaceae). *Pesquisas, Bot*ânica 75: 235–249.

Amengual, N., J. Pons, and N. Pou. 2007. *Diagnosis socioambiental y presupuesto para el Parque Nacional Los Quetzales (Costa Rica).* Memoria del proyecto de fin de carrera de Ciencias Ambientales - ANEXOS, Santo Domingo de Heredia, 86 pp. http://www.recercat.cat/bitstream/2072/5330/3/PDFAmPonsPouAnnexos.ppp

Andersohn, C. 2004. Does tree height determine epiphyte diversity? *Selbyana* 25(1): 101–117. https://www.jstor.org/stable/41760149

Andraka, S. 2023. Central America: Patches scattered through Mexico, Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica (Central American dry forests). http://worldwildlife.org/ecoregions/nt0209 Accessed 3 Mar 2023.

Ångström, J. 1873. Förteckning och beskrifning öfver mossor, samlade af Professor N.J. Anderson under Fregatten Eugenies verldsomsegling åren 1851–53. IV–VIII. Öfversigt *af Kongl. Vetenskaps-Akademiens Förhandlingar* 30(5): 113–151.

Ångström, J. 1876. Primae lineae muscorum cognoscendorum, qui ad Caldas Brasiliae sunt collecti. Continnuatio. II. Hepaticae. Öfversigt *af Kongl. Vetenskaps-Akademiens Förhandlingar* 33(7): 77–92.

Anonymous. 1873. Smärre notiser. Lärda sällskaps sammanträden. *Botaniska Notiser* 26(2): 59–62.

Antonelli, A., A. Zizka, F. A. Carvalho, R. Scharn, C. D. Bacon, D. Silvestro, and F. L. Condamine. 2018. Amazonia is the primary source of neotropical biodiversity. *Proceedings of the National Academy of Sciences* 115(23): 6034–6039. https://doi.org/10.1073/pnas.1713819115

Aranda, S. C., S. R. Gradstein, J. Patiño, B. Laenen, A. Désamoré, and A. Vanderpoorten. 2014. Phylogeny, classification and species delimitation in the liverwort genus *Odontoschisma* (Cephaloziaceae). *Taxon* 63(5): 1008–1025. https://doi.org/10.12705/635.12

Arnell, H. W. 1900. Beiträge zur Moosflora der Spitzbergischen Inselgruppe. Öfversigt *af Kongl. Vetenskaps-Akademiens Förhandlingar* 57: 99–130.

Arnell, S. W. 1956a. *Illustrated moss flora of Fennoscandia. I. Hepaticae.* Nordic Bryological Society, Lund, 314 pp.

Arnell, S. W. 1956b. Hepaticae collected in Cuba and Hispaniola by E. L. Ekman. *Bryologist* 59(4): 271–276. https://doi.org/10.2307/3240336

Arnell, S. W. 1956c. Hepaticae collected by O. Hedberg et al. on the East African Mountains. *Arkiv* för *Botanik*, n.s., 3(16): 517–562.

Arnell, S. W. 1957. Notes on South African Hepaticae. IV. *Botaniska Notiser* 110(1): 17–27.

Arnell, S. W. 1958a. Hepatics from Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha, 1937-38* 42: 1–76.

Arnell, S. W. 1958b. New species of *Asterella* and *Riccia* from Sto. Domingo and Cuba. *Bryologist* 61(2): 140–143. https://doi.org/10.2307/3240214

Arnell, S. W. 1959. Hepatics collected by Dr. G. Degelius on Martinique and in French Guiana in 1958. *Svensk Botanisk Tidskrift* 53(4): 499–506.

Arnell, S. W. 1962. Contribution to the knowledge of the Hepaticae of Ecuador. *Svensk Botanisk Tidskrift* 56(2): 334–350.

Arnell, S. W. 1963. *Hepaticae of South Africa.* Swedish Natural Science Research Council, Stockholm, 411 pp.

Arnell, S. W. 1965. Hepaticae collected by Mr. Gillis Een in Mauritius and Réunion in 1962. *Svensk Botanisk Tidskrift* 59(1): 65–84.

Arrocha, C. 1996. Impacto Ambiental de la tradición de usar briófitos en los nacimientos en la Navidad. *Briolatina* 38: 4.

Arrocha, C., G. Guerra, N. G. Batista, and Á. Benítez. 2020. Contribución a la diversidad de hepáticas neotropicales: nuevos registros para Panamá. *Neotropical Biodiversity* 6(1): 217–223. https://doi.org/10.1080/23766808.2020.1863757

Arroyo-Rodríguez, V., J. Puyana-Eraso, A. Bernecker-Lücking, and P. Hanson. 2007. Observations of *Geranomyia recondita* (Diptera: Tipuloidea: Limonidae) larvae feeding on epiphyllous liverworts in Costa Rica. *Journal of the New York Entomological Society* 114(3): 170–175. https://doi.org/10.1664/0028-7199(2007)1145b170:OOGRDT5d2.0.CO;2

Arts, T., and Y. Yamada. 1998. Four *Radula* (Radulaceae, Hepaticae) species new to Réunion. *Bryological Research* 7(6): 178–180. https://doi.org/10.24474/bryologicalresearch.7.6_178

Asakawa, Y. 1998. Biologically active compounds from bryophytes. *Journal of the Hattori Botanical Laboratory* 84: 91–104.

Asthana, A. K., and S. C. Srivastava. 1991. Indian hornworts (a taxonomic study). *Bryophyt. Biblioth.* 42: 1–159.

Augier, J. 1966. *Flore des Bryophytes.* Paul Lechevalier, Paris, 702 pp.

Austin, C. F. 1869. Characters of some new Hepaticae. *Proceedings of the Academy of Natural Sciences of Philadelphia* 21: 218–234. https://www.jstor.org/stable/4060128

Austin, C. F. 1873. *Hepaticae boreali-americanae.* Closter, New Jersey, pp. 1–48. https://bryophyteportal.org/portal/collections/exsiccati/index.php?ometid=57&specimenonly=1&imagesonly=0&collid =0&sortBy=0

Austin, C. F. 1876. Notes on hepaticology. *Botanical Bulletin (Hanover)* 1(8): 35–36.

Austin, C. F. 1877. New Hepaticae. *Bulletin of the Torrey Botanical Club* 6(30): 157–158. https://doi.org/10.2307/2475830

Austin, C. F. 1879. Notes on hepaticology. *Bulletin of the Torrey Botanical Club* 6(52): 301–306. https://doi.org/10.2307/2476817

Ayub, D. M., D. P. Costa, and R. P. Santos. 2014. Additions to the Ricciaceae flora of Rio Grande do Sul, including two remarkable records for the Brazilian liverwort flora. *Phytotaxa* 161(4): 294–300. https://doi.org/10.11646/phytotaxa.161.4.5

Bainard, J. D., and J. C. Villarreal. 2013. Genome size increases in recently diverged hornwort clades. *Genome* 56(8): 431–435. https://doi.org/10.1139/gen-2013-0041

Bakalin, V. A. 2013. New taxa of *Solenostoma* and *Plectocolea* and other taxonomic novelties based on study of collections in the New York Botanical Garden herbarium. *Polish Botanical Journal* 58(1): 127–142. https://doi.org/10.2478/pbj-2013-0014

Bakalin, V. A., Yu. D. Maltseva, K. G. Klimova, V. S. Nguyen, S. S. Choi, and A. V. Troitsky. 2022a. The systematic position of puzzling Sino-Himalayan *Lophocolea sikkimensis* (Lophocoleaceae, Marchantiophyta) is identified. *PhytoKeys* 206: 1–24. https://doi.org/10.3897/phytokeys.206.84227

Bakalin, V. A., A. A. Vil'net, D. G. Long, K. G. Klimova, Yu. D. Maltseva, V. S. Nguyen, and W. Z. Ma. 2022b. On two species of *Gymnomitrion* (Gymnomitriaceae, Marchantiophyta) in the Eastern Sino-Himalaya. *Phytotaxa* 533(2): 117–136. https://doi.org/10.11646/phytotaxa.533.2.1

Balciunas, J. K., and T. D. Center. 1981. Preliminary host specificity tests of a Panamanian *Parapoynx* as a potential biological control agent for *Hydrilla*. *Environmental Entomology* 10: 462–467.

Bapna, K. R., and P. Kachroo. 2000a. *Hepaticology in India – I.* Himanshu Publications, Udaipur, 439 pp.

Bapna, K. R., and P. Kachroo. 2000b. *Hepaticology in India – II.* Himanshu Publications, Udaipur, 491 pp.

Barillas de Klee, R., M. E. Pérez, A. Fajardo, and V. Ríos. 2008. *Composición y Distribución Geográfica de las Hepáticas Epifílicas presentes en los especimenes de Herbario de las familias Lauraceae y Arecaceae de Guatemala.* Centro de Estudios Conservacionistas (CECON), Herbario USCG, Guatemala, 56 pp. http://digi.usac.edu.gt/bvirtual/investigacio_files/INFORMES/PUIRNA/INF-2007-015.ppp

Barthlott, W., A. Hostert, G. Kier, W. Kueper, H. Kreft, J. Mutke, M. D. Rafiqpoor, and J. H. Sommer. 2007. Geographic patterns of vascular plant diversity at continental to global scales (Geographische Muster der Gefäßpflanzenvielfalt im kontinentalen und globalen Maßstab). *Erdkunde* 61(4): 305–315. https://doi.org/10.3112/erdkunde.2007.04.01

Bartholomew-Began, S. E. 1991. A morphogenetic re-evaluation of *Haplomitrium* Nees (Hepaticopsida). *Bryophytorum Bibliotheca* 41: 1–297.

Bartram, E. B. 1949. Mosses of Guatemala. *Fieldiana, Botany* 25: 1–442.

Bartram, E. B., and S. W. Arnell. 1961. Bryophytes of the Galápagos Islands collected principally by Gunnar Harling in 1959. *Bryologist* 64(2/3): 248–250. https://doi.org/10.2307/3240542

Bastos, C. J. P. 2004. *Lejeuneaceae (Marchantiophyta) no Estado da Bahía, Brasil.* Thesis, University de São Paulo, 442 pp.

Bastos, C. J. P. 2012. New combinations and synonyms in *Cheilolejeunea* (Spruce) Schiffn. (Lejeuneaceae, Marchantiophyta). *Journal of Bryology* 34(4): 312–315. https://doi.org/10.1179/1743282012Y.0000000026

Bastos, C. J. P. 2017. O género *Cheilolejeunea* (Spruce) Steph. (Lejeuneaceae, Marchantiophyta) nas Américas. *Pesquisas, Botânica* 70: 5–78. http://www.anchietano.unisinos.br/publicacoes/botanica/botanica70/001.pdf

Bastos, C. J. P., and S. R. Gradstein. 2006. Two new species of *Cheilolejeunea* (Spruce) Schiffn. (Lejeuneaceae) from Brazil: *C. lacerata* sp. nov. and *C. rupestris* sp. nov. *Journal of Bryology* 28(2): 133–138. https://doi.org/10.1179/174328206X105425

Bastos, C. J. P., and S. R. Gradstein. 2020a. The genus *Lejeunea* Lib. (Lejeuneaceae, Marchantiophyta) in Brazil. *Phytotaxa* 453(2): 55–107. https://doi.org/10.11646/phytotaxa.453.2.1

Bastos, C. J. P., and S. R. Gradstein. 2020b. The genus *Cheilolejeunea* (Marchantiophyta: Lejeuneaceae) in tropical America. *Nova Hedwigia* 111(3/4): 287–335. https://doi.org/10.1127/nova_hedwigia/2020/0596

Bastos, C. J. P., and A. L. Ilkiu-Borges. 2011. On the occurrence of *Prionolejeunea diversitexta* and *P. trachyodes* (Lejeuneaceae) in Brazil [Ocorrência de *Prionolejeunea diversitexta* e *P. trachyodes* (Lejeuneaceae) no Brasil]. *Boletim do Instituto de Botânica. São Paulo* 21: 5–8.

Bastos, C. J. P., A. L. Gentil, A. M. Sierra, and C. E. Zartman. 2020. Synopsis of the genus *Pycnolejeunea* (Spruce) Schiffn. (Lejeuneaceae, Marchantiophyta) in Brazil. *Hoehnea* 47: e1132019. http://dx.doi.org/10.1590/2236-8906-113/2019

Batan, N., M. Alataş, and T. Özdemır. 2013. *Leptoscyphus cuneifolius* (Lophocoleaceae, Marchantiophyta) new to southwest Asia. *Cryptogamie, Bryologie* 34(3): 373–377. https://doi.org/10.7872/cryb.v34.iss3.2013.373

Bechteler, J., G. E. Lee, A. Schäfer-Verwimp, M. A. M. Renner, D. F. Peralta, and J. Heinrichs. 2016a. Towards a monophyletic classification of Lejeuneaceae V:

The systematic position of *Pictolejeunea*. *Phytotaxa* 280(3): 259–270. https://doi.org/10.11646/phytotaxa.280.3.4

Bechteler, J., A. Schäfer-Verwimp, G. E. Lee, K. Feldberg, O. A. Pérez-Escobar, T. Pócs, D. F. Peralta, M. A. M. Renner, and J. Heinrichs. 2016b. Geographical structure, narrow species ranges, and Cenozoic diversification in a pantropical clade of epiphyllous leafy liverworts. *Ecology and Evolution* 7(2): 638–653. https://doi.org/10.1002/ece3.2656

Bechteler, J., G. E. Lee, A. Schäfer-Verwimp, T. Pócs, D. F. Peralta, M. A. M. Renner, H. Schneider, and J. Heinrichs. 2016c. Towards a monophyletic classification of Lejeuneaceae IV: Reinstatement of *Allorgella*, transfer of *Microlejeunea aphanella* to *Vitalianthus* and refinements of the subtribal classification. *Plant Systematics and Evolution* 302: 187–201. https://doi.org/10.1007/s00606-015-1252-8

Bednarek-Ochyra, H., J. Váňa, R. Ochyra, and R. I. Lewis Smith. 2000. *The liverwort flora of Antarctica*. Polish Academy of Science, Krakow, 236 pp.

Benedix, E. H. 1953. Indomalayische Cololejeuneen. *Feddes Repertorium Specierum Novarum Regni Vegetabilis. Beiheft* 134: 1–88.

Benítez, A., and S. R. Gradstein. 2011. Adiciones a la flora de briófitas del Ecuador. *Cryptogamie, Bryologie* 32: 65–74. https://sciencepress.mnhn.fr/en/periodiques/bryologie/32/1/adiciones-la-flora-de- briofitas-del-ecuador

Benitez, A., S. R. Gradstein, M. Prieto, G. Aragón, S. León-Yánez, A. Moscoso, and M. Burghardt. 2013. Additions to the bryophyte flora of Ecuador 2. Adiciones a la flora de Briofitas del Ecuador 2. *Tropical Bryology* 34: 99–106. https://doi.org/10.11646/BDE.34.1.8

Bergoing, J. P. 2015. *Geomorphology of Central America, A syngenetic perspective*. Elsevier, 162 pp. https://doi.org/10.1016/B978-0-12-803159-9.09987-8

Bernal, R., S. R. Gradstein, and M. Celis. 2015. New names and new combinations for the catalogue of the plants and lichens of Colombia. *Phytoneuron* 2015(22): 1–6. https://www.phytoneuron.net/2015Phytoneuron/22PhytoN-CatalogueColombia.pdf

Bernecker, A. 1990. *Zur Variabilität vegetativer Merkmale tropischer Lebermoose am Beispiel der Gattung* Bazzania *S.F. Gray in Costa Rica (Zentalamerika)*. Universität Ulm, Ulm, 48 pp.

Bernecker-Lücking, A. 1998a. New species of Lejeuneaceae (Hepaticae) from Costa Rica – I. *Aphanolejeunea*. *Nova Hedwigia* 66(1/2): 163–171. https://doi.org/10.1127/nova.hedwigia/66/1998/163

Bernecker-Lücking, A. 1998b. The genus *Cyclolejeunea* A. Evans (Hepaticae, Lejeuneaceae) in Costa Rica [El genera *Cyclolejeunea* A. Evans (Hepaticae, Lejeuneaceae) en Costa Rica]. *Phyton (Horn)* 38(1): 175–193. https://www.zobodat.at/pdf/PHY_38_1_0175-0193.pdf

Bernecker-Lücking, A. 1999. New species of Lejeuneaceae (Hepaticae) from Costa Rica. II. *Oryzolejeunea*. *Haussknechtia, Beiheft* 9: 37–40.

Bernecker-Lücking, A. 2000. Epiphyllous bryophytes from Cocos Island, Costa Rica. A floristic and phytogeographical study. *Ecotropica* 6: 55–69.

Bernecker-Lücking, A., and M. I. Morales. 1999. Notes and additions to *Cololejeunea linopteroides* with special reference to *Cololejeunea sigmoidea* (Hepaticae, Lejeuneaceae). *Bryologist* 102(3): 437–441. https://doi.org/10.2307/3244232

Bertoloni, A. 1817. Fine delle osservazioni botaniche. *Opuscoli Scientifici* 1: 229–243.

Bescherelle, É. 1892. Énumération des hépatiques récoltées au Tonkin par M. Balansa et déterminées par M. Stephani. *Revue Bryologique* 19(1): 13–15.

Bescherelle, E. 1893a. Hépatiques récoltées par M. l'abbé Delavay au Yunnam [sic] (Chine) et déterminées par M. Stephani. *Revue Bryologique* 20(6): 106–108.

Bescherelle, É. 1893b. Énumération des hépatiques connues jusqu'ici aux Antilles françaises (Guadeloupe et Martinique). *Journal de Botanique (Morot)* 7(9): 174–194.

Bescherelle, É., and R. Spruce. 1889. Hépatiques nouvelles des colonies Françaises. *Bulletin de la Société Botanique de France (Sér. 2, Congrès de Botanique)* 36: 177–189. https://www.biodiversitylibrary.org/item/8658#page/635/mode/1up

Bischler, H. 1962a. The genus *Calypogeja* Raddi in Central and South America. I. Introduction and subgenera *Mnioloma* and *Caracoma*. *Candollea* 18: 19–51.

Bischler, H. 1962b. The genus *Calypogeja* Raddi in Central and South America III. Subgenus *Calypogeja*, subgroups 4 and 5. *Candollea* 18: 95–128.

Bischler, H. 1962c. The genus *Calypogeja* Raddi in Central and South America. II. Subgenus *Calypogeja* subgroups 1, 2 and 3. *Candollea* 18: 53–93.

Bischler, H. 1962d. Hépatiques de la Colombie I. *Bazzania* S. F. Gray. *Revue Bryologique et Lichénologique* 31(1/2): 36–40.

Bischler, H. 1964. Le genre *Drepanolejeunea* Steph. en Amérique Centrale et Méridionale. *Revue Bryologie Lichénologique* 33(1/2): 15–179. https://www.biodiversitylibrary.org/item/281552#page/21/mode/1up

Bischler, H. 1965. Recherches sur l'anatomie de la tige chez les Lejeuneaceae. II. Les sous-families Lejeuneoideae, tribu Ptychantheae, Nipponolejeuneoideae et Myriocoleoideae. *Revue Bryologie Lichénologique* 33(3/4): 399–458. https://www.biodiversitylibrary.org/item/281552#page/437/mode/1up

Bischler, H. 1966. Recherches sur l'anatomie de la tige chez les Lejeuneaceae. III. Les sous-familles Lejeuneoideae, tribu Lejeuneeae, et Tuyamaelloideae. *Revue Bryologie Lichénologique* 34(3/4): 601–675. https://www.biodiversitylibrary.org/item/281571#page/723/mode/1up

Bischler, H. 1967a. Le genre *Drepanolejeunea* Steph. en Amérique Centrale et Méridionale. II. *Revue Bryologie Lichénologique* 35(1/4): 95–134. https://www.biodiversitylibrary.org/item/281549#page/105/mode/1up

Bischler, H. 1967b. Le genre *Drepanolejeunea* Steph. en Amérique Centrale et Méridionale. Compléments. *Revue Bryologie Lichénologique* 35(1/4): 135–137. https://www.biodiversitylibrary.org/item/281549#page/145/mode/1up

Bischler, H. 1968. Monographie du genre *Rhaphidolejeunea* Herzog. *Revue Bryologie Lichénologique* 36(1/2): 56–104. https://www.biodiversitylibrary.org/item/300361#page/66/mode/1up

Bischler, H. 1969. Le genre *Leptolejeunea* (Spruce) Steph. en Amérique. *Nova Hedwigia* 17: 265–350.

Bischler, H. 1979a. *Plagiochasma* Lehm. et Lindenb. IV. Les taxa américains. *Revue Bryologie Lichénologique* 45(3): 255–333. https://www.biodiversitylibrary.org/item/281569#page/267/mode/1up

Bischler, H. 1979b. *Plagiochasma* Lehm. et Lindenb. III. Les taxa d'Asie et d'Océanie. *Journal of the Hattori Botanical Laboratory* 45: 25–79.

Bischler, H. 1984. *Marchantia* L. The New World species. *Bryophytorum Bibliotheca* 26: 1–228.

Bischler, H., H. A. Miller, and C. E. B. Bonner. 1961. Studies in Lejeuneaceae III. A historical account of *Lejeunea cucullata* (Reinwardt, Blume & Nees) Nees and its varieties. *Nova Hedwigia* 3(4): 445–462.

Bischler, H., C. E. B. Bonner, and H. A. Miller. 1963. Studies in Lejeuneaceae VI: The genus *Microlejeunea* Steph. in Central and South America. *Nova Hedwigia* 5(1/2): 359–411.

Bischler-Causse, H. 1989. *Marchantia* L. The Asiatic and Oceanic taxa. *Bryophytorum Bibliotheca* 38: 1–317.

Bischler-Causse, H. 1993. *Marchantia* L. The European and African taxa. *Bryophytorum Bibliotheca* 45: 1–129.

Bischler-Causse, H., S. R. Gradstein, S. Jovet-Ast, D. G. Long, and N. Salazar Allen. 2005. Marchantiidae. *Flora Neotropica Monograph* 97: 1–267. https://www.jstor.org/stable/4393947

Bischoff, G. W. 1835. *Bemerkungen* über *die Lebermoose.*, Halle, pp. 1–180.

Bizot, M., and T. Pócs. 1974. East African Bryophytes I. *Egri Tanárképzö Föiskola tudományos közleményei*, n.s., 12: 383–449.

Blockeel, T. L., C. J. P. Bastos, H. Bednarek-Ochyra, R. Ochyra, M. V. Dulin, L. Fovet, C. García, L. Hedenäs, V. Hugonnot, M. Kirmaci, T. Koponen, M. Lebouvier, A. Martins, F. Müller, M. Sabovljević. D. Lakušić, A. Schäfer-Verwimp, C. Sérgio, B. Surina, and Ö. T. Yayintaş. 2009. New national and regional bryophyte records, 22. *Journal of Bryology* 31(3): 202–210. https://doi.org/10.1179/037366809X12469790518367

Blockeel, T. L., H. Bednarek-Ochyra, B. Cykowska, R. Ochyra, A. Düzenli, T. Ezer, D. T. Holyoak, V. Hugonnot, R. Kara, J. Larraín, M. Lebouvier, C. D. Preston, A. Schäfer-Verwimp, V. R. Smith, D. Spitale, S. Ştefănuţ, and J. Váňa. 2010. New national and regional bryophyte records, 23. *Journal of Bryology* 32(2): 140–147. https://doi.org/10.1179/037366810X12578498135913

Blomquist, H. L. 1939. A new species of *Plagiochila* from southern Appalachian Mountains. *Bryologist* 42(5): 113–117. https://doi.org/10.2307/3239827

Bôas-Bastos, S. B. V., and C. J. P. Bastos. 2016. Duas novas ocorrências de hepáticas folhosas (Marchantiophyta) para o estado da Bahia, Brasil [Two new occurrences of the liverworts (Marchantiophyta) for the state of Bahia, Brazil]. *Rodriguésia* 67(4): 1101–1106. https://doi.org/10.1590/2175-7860201667420

Bonner, C. E. B. 1953a. De hepaticis. II. An unpublished section of volume 6 of Stephani's Species hepaticarum: The genus *Marchantia*. *Candollea* 14: 101–112.

Bonner, C. E. B. 1953b. De hepaticis. III. A contribution to the study of the genus *Ceratolejeunea* (Spruce) Schiffner. *Candollea* 14: 163–252.

Bonner, C. E. B. 1962a. *Index hepaticarum. Pars II.* Achiton *to* Balantiopsis. J. Cramer, Weinheim, 320 pp.

Bonner, C. E. B. 1962b. *Index hepaticarum. Pars I.* Plagiochila *(Dum.) Dum.* J. Cramer, Weinheim, 340 pp.

Bonner, C. E. B. 1963a. *Index hepaticarum. Pars III.* Barbilophozia *to* Ceranthus. J. Cramer, Weinheim, pp. 321–636.

Bonner, C. E. B. 1963b. *Index hepaticarum. Pars IV.* Ceratolejeunea *to* Cystolejeunea. J. Cramer, Weinheim, pp. 637–926.

Bonner, C. E. B. 1965. *Index Hepaticarum. Pars V.* Delavayella *to* Geothallus. J. Cramer, Weinheim, 480 pp.

Bonner, C. E. B. 1966. *Index hepaticarum. Pars VI.* Goebeliella *to* Jubula. J. Cramer, Weinheim, pp. 481–739.

Bonner, C. E. B. 1977. *Index hepaticarum. Pars VIIa. Supplementum A-C.* J. Cramer, Vaduz, pp. 733–907.

Bouchard, R., G. Peñalosa-Bojacá, S. Toupin, Y. Guadalupe, J. Gudiño, N. Salazar Allen, F. W. Li, and J. C. Villarreal. 2020. Contrasting bacteriome of the hornwort *Leiosporoceros dussii* in two nearby sites with emphasis on the hornwort-cyanobacterial symbiosis. *Symbiosis* 81: 39–52. https://doi.org/10.1007/s13199-020-00680-1

Bowers, F. D. 1970. High elevation mosses of Costa Rica. *Journal of the Hattori Botanical Laboratory* 33: 7–35.

Brinker, R. R. 1948a. *Plagiochila tricarinata. Bryologist* 51(1): 7–9. https://doi.org/10.2307/3239235

Brinker, R. R. 1948b. *Plagiochila dotensis. Bryologist* 51(1): 1–4. https://doi.org/10.2307/3239233

Brinker, R. R. 1948c. *Plagiochila standleyi. Bryologist* 51(1): 4–6. https://doi.org/10.2307/3239234

Briscoe, L., J. J. Engel, L. Söderström, A. Hagborg, and M. J. von Konrat. 2015. Notes on Early Land Plants Today. 66. Nomenclatural notes on Acrobolbaceae. *Phytotaxa* 202(1): 58–62. https://doi.org/10.11646/phytotaxa.202.1.8

Briscoe, L., N. I. C. Zerega, H. T. Lumbsch, M. Stech, E. Kraichak, M. J. von Konrat, J. J. Engel, and N. J. Wickett. 2017. Molecular, morphological, and biogeographic perspectives on the classification of Acrobolboideae (Acrobolbaceae, Marchantiophyta). *Phytotaxa* 319(1): 56–70. https://doi.org/10.11646/phytotaxa.319.1.2

Brotherus, V. F. 1872. *Musci fenniae exsiccatae*. Fasc. 2. Helsinki, pp. 51–100. https://bryophyteportal.org/portal/collections/exsiccati/index.php?ometid=357&specimenonly=1&imagesonly=0&colli d=0&sortBy=0

Brummitt, R. K. 2001. World geographical scheme for recording plant distributions. 2nd ed. TDWG, Hunt Institute for Botanical Documentation, Pittsburgh, 153 pp. http://www.tdwg.org/standards/109

Buch, H., A. W. Evans, and F. Verdoorn. 1937. A preliminary check list of the Hepaticae of Europe and America (North of Mexico). *Annales Bryologici* 10: 3–8. https://bibdigital.rjb.csic.es/idurl/1/16491

Buchloh, G. 1961. Einige species novae und Neufunde von Moosen aus den Anden von Peru. *Nova Hedwigia* 3(4): 507–516.

Bullock, E. L., C. Nolte, A. L. Reboredo Segovia, and C. E. Woodcock. 2019. Ongoing forest disturbance in Guatemala's protected area. *Remote Sensing in Ecology and Conservation* 6(2): 141–152. https://doi.org/10.1002/rse2.130

Bullock, S. H. 1995. Plant reproduction in neotropical dry forests. In *Seasonally dry tropical forests*, ed. S. H. Bullock, H. A. Mooney, and E. Medina, pp. 277–303. Cambridge University Press, Cambridge, U.K.

Burghardt, M. 2007. *Revision of the genus* Tylimanthus *in tropical America.* Mathematisch Naturwissenschaftliche Fakultäten der Georg-August Universität, Göttingen, 42 pp.

Burghardt, M. 2019. New records and range extensions for the Ecuadorian liverwort flora. Notes on the Bryophytes of Ecuador II. *Nova Hedwigia* 109(1/2): 41–61. https://doi.org/10.1127/nova_hedwigia/2019/0539

Burghardt, M., and S. R. Gradstein. 2008. A revision of *Tylimanthus* (Acrobolbaceae, Marchantiophyta) in Tropical America, Africa, and Macaronesia. *Fieldiana, Botany*, n.s., 47: 199–210. https://doi.org/10.3158/0015-0746-47.1.199

Cailliau, A., D. G. Long, M. J. Price, and M. Perret. 2013. Phylogeny and systematic position of *Mesoptychia* (Lindb.) A. Evans. *Plant Systematics and Evolution* 299(7): 1243–1251. https://doi.org/10.1007/s00606-013-0792-z

Campbell, D. H. 1907. Studies on some Javanese Anthocerotaceae. I. *Annals of Botany. Oxford* 21(4): 467–486. https://doi.org/10.1093/oxfordjournals.aob.a089148

Campbell, E. O. 1963. New Zealand's largest liverwort, *Monoclea forsteri. Tuatara* 11: 16–19. http://www.nzetc.org/tm/scholarly/tei-Bio11Tuat01-t1-body-d2.html

Campbell, E. O. 1987. *Monoclea* (Hepaticae); distribution and number of species. *Bryologist* 90(4): 371–373. https://doi.org/10.2307/3243099

Campos, L. V. 2016. *Diversity of epiphytic bryophytes of the Colombian Amazon.* Universidad Nacional de Colombia, Bogotá, 148 pp. http://www.bdigital.unal.edu.co/54902/1/lauravictoriacamposSalazar Allen.2016.pdf

Campos, L. V. and J. Uribe. 2012. Taxonomic revision of Balantiopsaceae (Marchantiophyta) of Colombia. *Nova Hedwigia* 94(1/2): 97–127. https://doi.org/10.1127/0029-5035/2012/0094-0097

Campos, L. V., S. R. Gradstein, J. Uribe, and H. ter Steege. 2014. Additions to the catalogue of Hepaticae of Colombia II. *Cryptogamie, Bryologie* 35(1): 77–92. https://doi.org/10.7872/cryb.v35.iss1.2014.77

Campos, L. V., M. Stech, S. Mota de Oliveira, A. Muñoz-Ortiz, H. ter Steege, J. Uribe. 2022. Genetic population structure of *Cheilolejeunea rigidula* (Nees & Mont.) R.M. Schust. in the Amazon region. *Bryophyte Diversity and Evolution* 45(1): 119–132. https://doi.org/10.11646/bde.45.1.8

Cañiza, B. D., D. F. Peralta, and G. M. Suárez. 2017. New records and range extension of bryophytes for Paraguay. *Cryptogamie, Bryologie* 38(4): 393–410. https://doi.org/10.7872/cryb/v38.iss4.2017.393

Cañiza, B. D., J. Hentschel, and L. Söderström. 2023. Notes on Early Land Plants Today. 92. *Lejeunea trinitensis* var. *varians* (Herzog) comb. nov. *Lindbergia* 46(e25016): 1–2. https://doi.org/10.25227/linbg.25016

Cano, Á., F. E. Stauffer, T. Andermann, I. M. Liberal, A. Zizka, C. D. Bacon, H. Lorenzi, C. Christe, M. Töpel, M. Perret, and A. Antonelli. 2022. Recent and local diversification of Central American understorey palms. *Global Ecology and Biogeography* 31(8): 1513–1525. https://doi.org/10.1111/geb.13521

Cargill, D. C., S. Chantanaorrapint, R. L. Zhu, A. K. Asthana, L. Li, K. S. Renzaglia, and J. C. Villarreal. 2022. Resolving relationships within the hornwort genus *Anthoceros. Bryophyte Diversity and Evolution* 45(1): 26–43. https://doi.org/10.11646/bde.45.1.2

Carl, H. 1931a. Beiträge zur Kenntnis der Lebermoosgattung *Syzygiella* Spruce und *Jamesoniella* Spruce. *Hedwigia* 71(5): 283–304. https://www.zobodat.at/pdf/Hedwigia_71_1931_0283-0304.pdf

Carl, H. 1931b. Die Arttypen und die systematische Gliederung der Gattung *Plagiochila* Dum. *Ann. Bryol., Suppl.* 2: 1–170. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=8217

Carl, H. 1932. Über die vegetative Vermehrung in der Lebermoosgattung *Plagiochila. Hedwigia* 72(4/5): 148–155. https://www.zobodat.at/pdf/Hedwigia_72_1932_0148-0155.pdf

Carruthers, W. 1865. On the nomenclature of the British Hepaticae. *Journal of Botany* 3: 297–302. https://www.biodiversitylibrary.org/item/54457#page/310/mode/1up

Castle, H. 1925. A revision of the species of *Radula* of the United States and Canada. *Bulletin of the Torrey Botanical Club* 52(8): 409–445. https://doi.org/10.2307/2480406

Castle, H. 1936. A revision of the genus *Radula*. Introduction and part I. Subgenus *Cladoradula*. *Annales Bryologici* 9: 13–56. https://bibdigital.rjb.csic.es/idurl/1/16490

Castle, H. 1938. *Radula evansii. Annales Bryologici* 11: 37–39. https://bibdigital.rjb.csic.es/idurl/1/16450

Castle, H. 1939. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. *Annales Bryologici* 12: 21–47. https://bibdigital.rjb.csic.es/idurl/1/16450

Castle, H. 1959. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 3. *Dichotomae. Journal of the Hattori Botanical Laboratory* 21: 1–52.

Castle, H. 1960. *Radula pallens* (Swartz) Dumortier, an unrecognized species of the leafy hepatics. *Revue Bryologie Lichénologique* 29(1/2): 10–25.

Castle, H. 1963. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 6. *Saccatae*. *Revue Bryologie Lichénologique* 32(1/4): 1–48.

Castle, H. 1964. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 8. *Acutilobulae*. *Revue Bryologie Lichénologique* 33(1/2): 185–210.

Castle, H. 1965. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 9. *Densifoliae*. *Revue Bryologie Lichénologique* 33(3/4): 328–398.

Castle, H. 1966. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 10. *Ampliatae*. *Revue Bryologie Lichénologique* 34(1/2): 1–81.

Castle, H. 1967. A revision of the genus *Radula*. Part II. Subgenus *Acroradula*. Section 11. *Complanatae*. *Revue Bryologie Lichénologique* 35(1/4): 1–94.

Castle, H. 1968. *Radula* (L.) Dumortier. - A synopsis of the taxonomic revision of the genus. *Revue Bryologie Lichénologique* 36(1/2): 5–44.

Ceballos, J. A. 1985. *Flora de la real expedición botánica del Nuevo Reino de Granada (1783–1816)—2. Algas, líquenes, hongos, hepáticas y musgos.* Ediciones Cultura Hispánica, Madrid, 83 pp.

Chaudhary, B. L., T. P. Sharma, and C. Sanadhya. 2006. *Bryophyte flora of Gujarat (India)*. Himanshu Publications, Udaipur, 197 pp.

Churchill, S. P., C. Aldana, E. Calzadilla, S. Carreño, Y. Inturias, and I. I. Linneo Foronda. 2015. Adiciones y cambios en la brioflora de Bolivia [Additions and changes in the bryoflora of Bolivia]. *Revista de la Sociedad Boliviana de Botánica* 8(1): 7–16. http://resbbo.sbb.org.bo/wp-content/uploads/2020/07/1.-Vol.-8-pp-7-16-1.pdf

Clark, L. 1953a. Some Hepaticae from Galápagos, Cocos and other Pacific coast islands. *Proceedings of the California Academy of Sciences*, ser. 4, 27(18): 593–624. https://www.biodiversitylibrary.org/item/53700

Clark, L. 1953b. *Frullania spruceana. Bryologist* 56(2): 140–142. https://doi.org/10.2307/3240357

Clark, L. 1953c. *Frullania piliflora*. *Bryologist* 56(4): 286–289. https://doi.org/10.2307/3240461
Clark, L. 1953d. *Frullania crinoidea*. *Bryologist* 56(3): 213–216. https://doi.org/10.2307/3240121
Clark, L. 1954a. *Frullania armata*. *Bryologist* 57(1): 36–39. https://doi.org/10.2307/3240075
Clark, L. 1954b. *Frullania bullatiflora*. *Bryologist* 57(1): 38–41. https://doi.org/10.2307/3240076
Clark, L. 1954c. *Frullania microcephala*. *Bryologist* 57(3): 233–235. https://doi.org/10.2307/3240088
Clark, L. 1954d. *Frullania guatemalensis*. *Bryologist* 57(3): 235–238. https://doi.org/10.2307/3240089
Clark, L. 1955a. *Frullania strobilantha*. *Bryologist* 58(2): 146–149. https://doi.org/10.2307/3240431
Clark, L. 1955b. *Frullania semivillosa*. *Bryologist* 58(1): 64–67. https://doi.org/10.2307/3240101
Clark, L. 1956a. *Frullania brachycarpa*. *Bryologist* 59(2): 140–143. https://doi.org/10.2307/3239928
Clark, L. 1956b. *Frullania gibbosa*. *Bryologist* 59(4): 280–283. https://doi.org/10.2307/3240338
Clark, L. 1958a. *Frullania dubia*. *Bryologist* 61(2): 149–151. https://doi.org/10.2307/3240217
Clark, L. 1958b. *Frullania longicollis*. *Bryologist* 61(2): 143–146. https://doi.org/10.2307/3240215
Clark, L. 1958c. *Frullania gymnotis* found in the United States. *Bryologist* 61(1): 67. https://doi.org/10.2307/3239968
Clark, L. 1959. *Frullania laxiflora*. *Bryologist* 62(2): 135–138. https://doi.org/10.2307/3240033
Clark, L., and T. C. Frye. 1945. *Frullania cucullata*. *Bryologist* 48(2): 53–56. https://doi.org/10.2307/3239123
Clark, L., and T. C. Frye. 1952. *Frullania pittieri*. *Bryologist* 55(2): 130–132. https://doi.org/10.2307/3240200
Clark, L., and T. C. Frye. 1953. *Frullania peruviana*. *Bryologist* 56(2): 134–137. https://doi.org/10.2307/3240355
Clark, L., and D. Mullen. 1947. *Frullania closterantha*. *Bryologist* 50(1): 86–88. https://doi.org/10.2307/3239590
Clark, L., and M. R. Schultz. 1953a. *Frullania macrorhyncha*. *Bryologist* 56(4): 283–285. https://doi.org/10.2307/3240460
Clark, L., and M. R. Schultz. 1953b. *Frullania hamiflora*. *Bryologist* 56(3): 180–182. https://doi.org/10.2307/3240116
Clark, L., and M. R. Schultz. 1953c. *Frullania cocosensis*. *Bryologist* 56(3): 207–209. https://doi.org/10.2307/3240119
Clark, L., and R. D. Svihla. 1944a. *Porella swartziana*. *Bryologist* 47(2): 62–66. https://doi.org/10.2307/3239600
Clark, L., and R. D. Svihla. 1944b. *Frullania brasiliensis*. *Bryologist* 47(3): 108–112. https://doi.org/10.2307/3239043
Clark, L., and R. D. Svihla. 1944c. *Porella arborea*. *Bryologist* 47(1): 36–40. https://doi.org/10.2307/3239673
Clark, L., and R. D. Svihla. 1945a. *Frullania atrata*. *Bryologist* 48(4): 187–189. https://doi.org/10.2307/3238960
Clark, L., and R. D. Svihla. 1945b. *Frullania riojaneirensis*. *Bryologist* 48(2): 56–59. https://doi.org/10.2307/3239124
Clark, L., and R. D. Svihla. 1947a. *Frullania convoluta*. *Bryologist* 50(4): 316–319. https://doi.org/10.2307/3239631
Clark, L., and R. D. Svihla. 1947b. *Frullania nodulosa*. *Bryologist* 50(4): 381–387. https://doi.org/10.2307/3239642
Clark, L., and R. D. Svihla. 1947c. *Frullania arecae*. *Bryologist* 50(1): 82–85. https://doi.org/10.2307/3239589
Clark, L., and R. D. Svihla. 1948a. Provisional keys to the *Frullanias* of Middle America. *Bryologist* 51(1): 17–27. https://doi.org/10.2307/3239238
Clark, L., and R. D. Svihla. 1948b. *Frullania gymnotis*. *Bryologist* 51(4): 239–242. https://doi.org/10.2307/3239164
Clark, L., and R. D. Svihla. 1948c. *Frullania mirabilis*. *Bryologist* 51(3): 189–191. https://doi.org/10.2307/3239839
Clark, L., and R. D. Svihla. 1950a. Notes on the reproduction of three species of *Frullania*. *Bryologist* 53(2): 125–128. https://doi.org/10.2307/3240377
Clark, L., and R. D. Svihla. 1950b. *Frullania pluricarinata*. *Bryologist* 53(2): 121–123. https://doi.org/10.2307/3240375
Clark, L., and R. D. Svihla. 1950c. *Frullania spiniloba*. *Bryologist* 53(1): 66–69. https://doi.org/10.2307/3240262
Clark, L., and R. D. Svihla. 1950d. A new *Frullania* from Panama. *Bryologist* 53(1): 63–66. https://doi.org/10.2307/3240261
Clark, L., and R. D. Svihla. 1951a. Three closely related forms of *Frullania*. *Bryologist* 54(2): 124–126. https://doi.org/10.2307/3240446
Clark, L., and R. D. Svihla. 1951b. *Frullania atrosanguinea*. *Bryologist* 54(1): 72–74. https://doi.org/10.2307/3239983
Clark, L., and R. D. Svihla. 1952a. *Frullania intumescens*. *Bryologist* 55(3): 186–189. https://doi.org/10.2307/3239848
Clark, L., and R. D. Svihla. 1952b. *Frullania glomerata*. *Bryologist* 55(4): 292–294. https://doi.org/10.2307/3240395
Clark, L., and R. D. Svihla. 1953a. *Frullania hondurae*. *Bryologist* 56(4): 289–292. https://doi.org/10.2307/3240462
Clark, L., and R. D. Svihla. 1953b. *Frullania osculatiana*. *Bryologist* 56(2): 137–139. https://doi.org/10.2307/3240356
Clark, L., and R. D. Svihla. 1956. *Frullania arecae*, a variable species. *Bryologist* 59(1): 36–38. https://doi.org/10.2307/3240289
Cole, M. C. 1982. *An illustrated guide to the leafy genera of Costa Rican Hepaticae*. University of Michigan Herbarium, Ann Arbor, 76 pp.
Cole, M. C. 1983. An illustrated guide to the genera of Costa Rican Hepaticae. *Brenesia* 21: 137–201.
Cole, M. C. 1984. Thallose liverworts and hornworts of Costa Rica. *Brenesia* 22: 319–348.
Conservation International. 2011. Biodiversity hotspots revisited. www.biodiversityhotspots.org/xp/Hotspots/resources/maps.xml (accessed 15 October 2022)
Corda, A. K. J. 1829. Genera hepaticarum. In *Beiträge zur Naturgeschichte als Fortsetzung des Naturalientausches No. 12*, ed. M. P. Opiz, pp. 643–655. C. W. Enders, Prague.
Cornelissen, J. H., S. I. Lang, N. A. Soudzilovskaia, and H. J. During. 2007. Comparative cryptogam ecology: A review of bryophyte and lichen traits that drive biogeochemistry. *Annals of Botany* 99(5), 987–1001. https://doi.org/10.1093/aob/mcm030
Corrales, L., C. Bouroncle, and J. C. Zamora. 2015. An overview of forest biomes and ecoregions of Central America. In *Climate change impacts on tropical forests in Central America*, ed. A. Chiabai, pp. 33–54. Routledge, London. https://doi.org/10.4324/9781315866703
Costa, D. P. 2008. Metzgeriaceae. *Flora Neotropica Monographs* 102: 1–169. https://www.jstor.org/stable/25660964
Costa, D. P. 2009. Crittogame brasiliane, a review of Guiseppe Raddi bryophyte collections in the state of Rio de Janeiro. *Journal of Bryology* 31(4): 222–233. https://doi.org/10.1179/037366809X12495600997402
Costa, D. P. 2017. Bryophyte results from a botanical expedition to Serra do Aracá, State Amazonas, Brazil: Diversity, distribution, and endemism. *Bryologist* 120(1): 45–50. https://doi.org/10.1639/0007-2745-120.1.045
Costa, D. P., and S. R. Gradstein. 2000. On the status of *Metzgeria angusta*, a poorly known neotropical taxon. *Bryologist* 103(4): 757–759. https://doi.org/10.1639/0007-2745(2000)1035b0757:OTSOMA5d2.0.CO;2
Costa, D. P., and N. D. Santos. 2009. Conservação de hepáticas na Mata Atlântica do sudeste do Brasil: uma análise regional no estado do Rio de Janeiro [Liverwort conservation in the Atlantic Rain Forest of Southeastern Brazil: A regional survey in Rio de Janeiro state]. *Acta Botanica Brasiliensis* 23(4): 913–922. https://doi.org/10.1590/S0102-33062009000400001
Costa, D. P., and A. G. Silva. 2003. Briófitas da Reserva Natural da Vale do Rio Doce, Linhares, Espírito Santo, Brasil [Bryophytes of the Reserva Natural de Vale do Rio Doce, Linhares, Espírito Santo, Brazil]. *Boletim do Museu de Biologia Mello Leitão* 16: 21–38. http://www.melloleitao.iphan.gov.br/boletim/arquivos/16/Costa&Silva2.ppp
Costa, D. P., D. F. Peralta, W. R. Buck, J. Larraín, M. J. von Konrat. 2017. Serra do Curicuriari, Amazonas state, Brazil: The first bryofloristic analysis for a Brazilian mountain in the Amazonian. *Phytotaxa* 303(3): 201–217. https://doi.org/10.11646/phytotaxa.303.3.1
Costa, D. P., F. Nadal, and T. C. Rocha. 2020. The first botanical explorations of bryophyte diversity in the Brazilian Amazon mountains: High species diversity, low endemism, and low similarity. *Biodiversity and Conservation* 29: 2663–2688. https://doi.org/10.1007/s10531-020-01993-9
Coxson, D. S., D. D. McIntyre, and H. J. Vogel. 1992. Pulse release of sugars and polyols from canopy bryophytes in tropical montane rain forest (Guadeloupe, French West Indies). *Biotropica* 24: 121– 133
Crandall, B. J. 1969. Morphology and development of branches in the leafy Hepaticae. *Beiheft zur Nova Hedwigia* 30: 1–262.
Crandall-Stotler, B. J., and R. E. Stotler. 1974. A monograph of the genus *Bryopteris* (Swartz) Nees von Esenbeck. *Bryophytorum Bibliotheca* 3. J. Cramer. ISBN-10-3768209377. 223 p.
Crandall-Stotler, B. J., and W. R. Guerke. 1980. Developmental anatomy of *Jubula* Dum. (Hepaticae). *Bryologist* 83(2): 179–201. https://doi.org/10.2307/3242131

Crandall-Stotler, B. J., L. L. Forrest, and R. E. Stotler. 2005. Evolutionary trends in the simple thalloid liverworts (Marchantiophyta, Jungermanniopsida subclass Metzgeriidae). *Taxon* 54(2): 299–316. https://doi.org/10.2307/25065359

Crandall-Stotler, B. J., R. E. Stotler, L. Zhang, and L. L. Forrest. 2010. On the morphology, systematics and phylogeny of *Noteroclada* (Noterocladaceae, Marchantiophyta). *Nova Hedwigia* 91(3/4): 421–450. https://doi.org/10.1127/0029-5035/2010/0091-0421

Cremer, K. W., and A. B. Mount. 1965. Early stages of plant succession following the complete felling and burning of *Eucalyptus regnans* forest in the Florentine Valley, Tasmania. *Australian Journal of Botany* 13(2): 303–322. https://doi.org/10.1071/BT9650303

Crosby, M. R. 1971. Additional Panamanian bryophytes. *Annals of the Missouri Botanical Garden* 58(2): 258–260.

Crosby, M. R., and J. J. Engel. 2006. *Index of hepatics 1974–2000*. Hattori Botanical Laboratory, Nichinan, 368 pp. https://hattorilab.org/pdf/Crosby&Engel_2006_Index20of20Hepatics201974-2000_ed.pdf

Crum, H. A., and C. B. Arzeni. 1953. Additional bryophytes from Panama. *Revue Bryologie Lichénologique* 22(3/4): 148–160.

Crum, H. A., and J. Bruce. 1996. A new species of *Cryptothallus* from Costa Rica. *Bryologist* 99(4): 433–438. https://doi.org/10.2307/3244107

Czumay, A., S. Dong, A. Scheben, A. Schäfer-Verwimp, K. Feldberg, and J. Heinrichs. 2013. Transfer of *Lejeunea huctumalcensis* to *Physantholejeunea* (Lejeuneaceae, Porellales). *Australian Systematic Botany* 26(5): 386–392. https://doi.org/10.1071/SB13039

Dambrosio, U. 2023. Central America: Off the coast of Costa Rica in the Pacific. Ocean. https://www.worldwildlife.org/ecoregions/nt0116 (accessed 20 February 2023).

Damsholt, K. 2002. *Illustrated flora of Nordic liverworts and hornworts*. Nordic Bryological Society, Lund, 837 pp.

Damsholt, K. 2013. *The liverworts of Greenland*. Nordic Bryological Society, Lund, 626 pp.

Dauphin, G. 1995. *Briófitas de la Isla de Cocos: Diversidad y Ecología*. Universidad de Costa Rica, San Pedro.

Dauphin, G. 1999. Bryophytes of Cocos Island, Costa Rica: Diversity, biogeography and ecology. *Revista de Biología Tropical* 47(3): 309–328. http://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S0034-77441999000300003&lng=es&nrm=iso

Dauphin, G. 2000. *The genus* Ceratolejeunea *Jack & Steph. (Hepaticae: Lejeuneaceae) in Tropical America*. Georg-August Universität, Göttingen, 143 pp. https://doi.org/10.53846/goediss-3689

Dauphin, G. 2003. The genus *Ceratolejeunea* Jack & Steph. (Hepaticae: Lejeuneaceae) in Tropical America. *Flora Neotropica Monographs* 90: 1–86. https://www.jstor.org/stable/4393926

Dauphin, G. 2005. Catalogue of Costa Rican Hepaticae and Anthocerotae. *Tropical Bryology* 26: 141–218. https://doi.org/10.11646/bde.26.1.17

Dauphin, G. 2007. Nuevas adiciones de especies de hepáticas para la flora de Panamá [New records of hepatic species for the flora oaf Panama]. *Candollea* 62: 45–51. http://www.ville-ge.ch/cjb/publications/cando621/C621_45-51.pdf

Dauphin, G., and P. Erzberger. 2010. *Iwatsukia bifida* (Cephaloziaceae, Marchantiophyta), a Guyana Highland species new to Central America. *Nova Hedwigia* 91(3/4): 451–458. https://doi.org/10.1127/0029-5035/2010/0091-0451

Dauphin, G., and S. R. Gradstein. 2003. A new species of *Cheilolejeunea* (Spruce) Schiffn. from Panamá. *Journal of Bryology* 25(4): 259–261. https://doi.org/10.1179/037366803225013128

Dauphin, G., and M. H. Grayum. 2005. Bryophytes of the Santa Elena peninsula and islas Murciélago, Guanacaste, Costa Rica, with special attention to Neotropical dry forest habitats. *Lankesteriana* 5(1): 53–61. http://lankesteriana.org/lankesteriana/Lankesteriana20vol.205. 202005/Lankesteriana 205(1)/Numerocompleto/Lankesteriana205(1).pdf

Dauphin, G., S. R. Gradstein, A. Bernecker-Lücking, and M. I. Morales. 1998. Additions to the hepatic flora of Costa Rica II. *Lindbergia* 23(2): 74–80. https://www.jstor.org/stable/20149975

Dauphin, G., T. Pócs, J. C. Villarreal, and N. Salazar Allen. 2006. Nuevos registros de hepáticas y anthocerotófitas para Panamá. *Trop. Bryol.* 27: 73–85. https://doi.org/10.11646/bde.27.1.10

Dauphin, G., T. Morales, and E. J. Moreno. 2008. Catálogo preliminar de Lejeuneaceae (Hepaticae) de Venezuela. *Cryptogamie, Bryologie* 29(3): 215–265. http://sciencepress.mnhn.fr/en/periodiques/bryologie/29/3/catalogo-preliminar-de- lejeuneaceae-hepaticae-de-venezuela

Dauphin, G., R. P. Wunderlin, F. B. Essig, and P. G. Davison. 2011. A checklist of the liverworts (Marchantiophyta) and hornworts (Anthocerotophyta) of Florida. *Journal of the Botanical Research Institute of Texas* 5(2): 773–814.

Dauphin, G., N. Salazar Allen, J. A. Gudiño, A. R. Sierra, and D. Reyes Montoya. 2015. Nuevas adiciones de especies de hepáticas (Marchantiophyta) para la flora de Panamá II. *Brenesia* 83/84: 16–21. http://biblioteca.museocostarica.go.cr/articulo.aspx?id=6760&art=3606283

Dauphin, G., S. R. Gradstein, M. I. Morales, and J. Sánchez. 2018. *Lophocolea fragrans* subsp. *cocosana* subsp. nov. and *L. tenerrima* (Marchantiophyta: Lophocoleaceae) new to Central America. *Nova Hedwigia* 106(1/2): 27–34. https://doi.org/10.1127/nova_hedwigia/2017/0422

Dauphin, G., S. R. Gradstein, and N. Salazar Allen. 2022. Liverworts and hornworts of Barro Colorado Island, Panama [Hépatiques et anthocérotes de l'île de Barro Colorado, Panama]. *Cryptogamie, Bryologie* 43(9): 153–165. https://doi.org/10.5252/cryptogamie-bryologie2022v43a9

Dauphin, G., S. R. Gradstein, N. Salazar Allen, and C. Chung. 2024. Liverworts and hornworts of Barro Colorado Island. In *The First 100 Years of Research on Barro Colorado: Plant and Ecosystem Science*, ed. H. C. Müller-Landau and S. J. Wright, pp. 785–789. Washington, DC: Smithsonian Institution Scholarly Press.

Davis, E. C. 2004. A molecular phylogeny of leafy liverworts (Jungermanniidae: Marchantiophyta). *Monographs in Systematic Botany from the Missouri Botanical Garden* 98: 61–86.

Davis, S. D., V. H. Heywood, O. Herrera MacBryde, J. Villa-Lobos, and A. C. Hamilton, eds. 1997. *Centres of plant diversity: A guide and strategy for their conservation. Volume 3: The Americas*. IUCN Publications Unit, Cambridge, U.K. 562 pp.

Davison, P. G. 1993. *Floristic and phytogeographic studies of the hepatics of the Aleutian Islands*. University of Tennessee, Knoxville, 385 pp.

Davison, P. G., and A. R. Schotz. 1998. Additions to the bryophyte flora from two Bibb County nature preserves, including first reports of *Plagiochasma crenulatum* and *Trichostomum brachydontium* east of the Mississippi River and other range. *Evansia* 15(1): 32–36.

Davison, P. G., D. K. Smith, K. Feldberg, M. Lindner, and J. Heinrichs. 2006. *Plagiochila punctata* (Plagiochilaceae) in Tennessee, new to North America. *Bryologist* 109(2): 242–246. https://doi.org/10.1639/0007-2745(2006)1095b242:PPPITN5d2.0.CO;2

Dawes, T., J. C. Villarreal, P. Szövény, I. Bisang, F.-W. Li, D. A. Hauser, D. Quandt, D. C. Cargill, and L. L. Forrest. 2020. Molecular data shows a recent European origin of the model species *Anthoceros agrestis*. *Plant Systematics and Evolution* 306(49): 1–10. https://doi.org/10.1007/s00606-020-01676-6

De Candolle, A.-P., J. P. Lamarck. 1815. *Flore française, tome cinquième, ou sixième volume*. Desray, Paris, 662 pp. https://doi.org/10.5962/bhl.title.112968

Delgadillo, C. 1986. Aaron J. Sharp: A Life-time of Botanical Experience. *Bryologist* 89(1): 3–7. https://www.jstor.org/stable/3243067

De Lucia, E. H., M. H. Turnbull, A. S. Walcroft, K. L. Griffen, D. T. Tissue, D. Glenny, T. M. McSeveny, and D. Whitehead. 2003. The contribution of bryophytes to the carbon exchange for a temperate rainforest. *Global Change Biology* 9(8): 1158–1170. https://doi.org/10.1046/j.1365- 2486.2003.00650.x

De Notaris, G. 1857. Jungermanniearum americanarum pugillus. *Memorie della reale accademia delle scienze di Torino*, ser. 2, 16: 211–238. http://www.biodiversitylibrary.org/item/32616

Devine, J. A., N. Currit, Y. Reygadas, L. L. Liller, and G. Allen. 2020. Drug trafficking, cattle ranching and land use and land cover change in Guatemala's Maya Biosphere Reserve. *Land Use Policy* 95(104578): 1–10. https://doi.org/10.1016/j.landusepol.2020.104578

Devos, N., M. A. M. Renner, S. R. Gradstein, A. J. Shaw, and A. Vanderpoorten. 2011. Molecular data challenge traditional subgeneric divisions in the leafy liverwort *Radula*. *Taxon* 60(6): 1623–1632. https://doi.org/10.1002/tax.606007

Dickson, J. 1785. *Fasciculus plantarum cryptogamicarum britanniae*. G. Nichol, London, 26 pp. https://books.google.no/books/about/Fasciculus_plantarum_cryptogamicarum_Bri.html?id=Fc0VAAAAYAAJ&redir_esc

Dickson, J. 1790. *Fasciculus secundus plantarum cryptogamicarum britanniae*. G. Nichol, London, 31 pp. https://books.google.no/books/about/Jacobi_Dickson_fasciculus_plantarum_cryp.html?id=dXNbAAAAQAAJ&redir_esc=y

Dimon, R. J., J. Váňa, A. Schäfer-Verwimp, J. Heinrichs, J., and M. A. M. Renner. 2018. *Conoscyphus* belongs to Acrobolbaceae (Jungermanniineae) not Lophocoleaceae (Lophocoleineae). *Australian Systematic Botany* 31(3): 209–218. https://doi.org/10.1071/SB17041

Dinerstein, E., D. M. Olson, D. J. Graham, A. L. Webster, S. A. Primm, M. P. Bookbinder, and G. Ledec. 1995. *A Conservation Assessment of the Terrestrial Ecoregions of Latin America and the Caribbean*. The World Bank in association with WWF, Washington, D.C. https://doi.org/10.1596/0-8213-3295-3

Dinerstein, E., D. Olson, A. Joshi, C. Vynne, N. D. Burgess, E. Wikramanayake, N. Hahn, S. Palminteri, P. Hedao, R. Noss, M. Hansen, H. Locke, E. C. Ellis, B. Jones, C. V. Barber, R. Hayes, C. Kormos, V. Martin, E. Crist, W. Sechrest,

L. Price, J. E. M. Baillie, D. Weeden, K. Suckling, C. Davis, N. Sizer, R. Moore, D. Thau, T. Birch, P. Potapov, S. Turubanova, A. Tyukavina, N. de Souza, L. Pintea, J. C. Brito, O. A. Llewellyn, A. G. Miller, A. Patzelt, S. A. Ghazanfar, J. Timberlake, H. Klöser, Y. Shennan-Farpón, R. Kindt, J.-P. Barnekow Lillesø, P. van Breugel, L. Graudal, M. Voge, K. F. Al-Shammari, and M. Saleem. 2017. An ecoregion-based approach to protecting half the terrestrial realm. *BioScience* 67(6): 534–545. https://doi.org/10.1093/biosci/bix014

Dong, S., A. Schäfer-Verwimp, P. Meinecke, K. Feldberg, A. Bombosch, T. Pócs, E. R. Schmidt, J. Reitner, H. Schneider, and J. Heinrichs. 2012. Tramps, narrow endemics and morphologically cryptic species in the epiphyllous liverwort *Diplasiolejeunea*. *Molecular Phylogenetics and Evolution* 65(2): 582–594. https://doi.org/10.1016/j.ympev.2012.07.009

Dong, S., A. Schäfer-Verwimp, T. Pócs, K. Feldberg, A. Czumaj, A. R. Schmidt, H. Schneider, and J. Heinrichs. 2013. Size doesn't matter – recircumscription of *Microlejeunea* (Lejeuneaceae, Porellales) based on molecular and morphological evidence. *Phytotaxa* 85(2): 41–55. https://doi.org/10.11646/phytotaxa.85.2.2

Droege, S., A. Cyr, and J. Larivée. 2008, Checklists: An under-used tool for the inventory and monitoring of plants and animals. *Conservation Biology* 12(5): 1134–1138. https://doi.org/10.1046/j.1523-1739.1998.96402.x

Duff, R. J., D. C. Cargill, J. C. Villarreal, and K. S. Renzaglia. 2004. Phylogenetic relationships of the hornworts based on rbcL sequence data: Novel relationships and new insights. *Monographs in Systematic Botany from the Missouri Botanical Garden* 98: 41–58.

Duff, R. J., J. C. Villarreal, D. C. Cargill, and K. S. Renzaglia. 2007. Progress and challenges toward developing a phylogeny and classification of the hornworts. *Bryologist* 110(2): 214–243. https://doi.org/10.1639/0007-2745(2007)1105b214:PACTDA5d2.0.CO;2

Dugas, M. 1928. *Contribution à l'*étude *du genre* Plagiochila *Dum.* Masson et Cie, Paris, pp. 1–199.

Dugas, M. 1929. Contribution à l'étude du genre *"Plagiochila"* Dum. *Annales des Sciences Naturelles, Botanique*, sér. 10, 11: 1–199. https://bibdigital.rjb.csic.es/idurl/1/11940

Düll, R. 1999. Moosexkursionen in Mexiko – 1966 und 1975. *Haussknechtia, Beih.* 9: 97–110.

Dumortier, B. C. 1822. *Commentationes botanicae.* Ch. Casterman-Dien, Tournay, 118 pp. https://doi.org/10.5962/bhl.title.10534

Dumortier, B. C. 1831. *Sylloge Jungermannidearum Europae indigenarum.* J. Casterman, Tournay, 100 pp. https://doi.org/10.5962/bhl.title.22343

Dumortier, B. C. 1835. *Recueil d'Observations sur les Jungermanniacées.* J.-A. Blanquart, Tournay, 27 pp. https://doi.org/10.5962/bhl.title.731

Duncan, B., and N. G. Slack. 2015. *New York State liverworts distributional checklist.* Privately published by author, 20 pp.

Durant-Archibold, A. A., N. Salazar Allen, A. Garrido, J. G. Ledezma, M. P. Gupta. 2017. An analysis of volatile components of the liverworts *Dumortiera hirsuta* subsp. *hirsuta* and *Dumortiera hirsuta* subsp. *nepalensis* (Dumortieraceae) from Panama and taxonomic observations on the species. *Natural Product Communications* 13(8): 1031–1034. https://doi.org/10.1177/1934578X1801300827

Dusén, P. 1905. Sur la flore de la Serra do Itatiaya au Brésil. *Archivos do Museu Nacional do Rio de Janeiro* 13: 1–119. https://www.biodiversitylibrary.org/item/87058#page/1135/mode/1up

Duss, A. 1903. Énumération *méthodique des muscinées des Antilles françaises. I. – Hépatiques*. Lucien Declume, Lons-le-Saunier, 41 pp. https://www.biodiversitylibrary.org/item/23373#page/9/mode/1up

Easa, P. S. 2003. Biodiversity documentation for Kerala, part 4 Bryophytes. *Kerala Forest Research Handbook* 17: 1–47.

Edtbauer, A., E. Y. Pfannerstill, A. P. Pires Florentino, C. G. G. Barbosa, E. Rodriguez-Caballero, N. Zannoni, R. P. Alves, S. Wolff, A. Tsokankunky, A. Aptroot, M. Oliveira, A. C. Araújo, M. Sörgel, S. Mota de Oliveira, B. Weber, and J. Williams. 2021. Cryptogamic organisms are a substantial source and sink for volatile organic compounds in the Amazon region. *Communications Earth & Environment* 2 (258): 1–14. https://doi.org/10.1038/s43247-021-00328-y

Eggers, J. 2001. Epiphyllous Lejeuneaceae in Costa Rica. Contributions to the altitudinal distribution of selected species. *Tropical Bryology* 20: 109–115. https://doi.org/10.11646/bde.20.1.19

Eggers, J., J.-P. Frahm, and R. A. Pursell. 1998. New bryophyte taxon records for tropical countries II. *Tropical Bryology* 14: 81–84. https://doi.org/10.11646/bde.14.1.12

Eggers, J., C. R. Stevenson, R. D. Porley, and M. Stech. 2001. New bryophyte records for the tropical countries IV. *Tropical Bryology* 20: 97–100. https://doi.org/10.11646/bde.20.1.16

Eggers, J., M. Infante, and P. Heras. 2004. New bryophyte taxon records for tropical countries 5. *Tropical Bryology* 25: 19–23. https://doi.org/10.11646/BDE.25.1.4

Ehrhart, J. F. 1783. Meine Reise nach der Grafschaft Bentheim, un von da nach Holland, nebst der Retour nach Herrenhausen (Fortsetzung). *Hannoverisches Magazin* 21(18): 273–288. https://www.biodiversitylibrary.org/item/93559#page/153/mode/1up

Ehrhart, J. F. 1784. Botanische Bemerkungen. *Hannoverisches Magazin* 22(8): 113–144. http://www.biodiversitylibrary.org/item/93202#83

Ellis, L. T., S. C. Aranda, A. K. Asthana, P. Bansal, V. Nath, V. Sahu, J. Bayliss, G. Asthana, S. Srivastava, S. Yadav, M. Brugués, M. J. Cano, M. V. Dulin, E. Fudali, E. Fuertes, R. Gabriel, F. Pereiram, J. A. F. Silva, S. R. Gradstein, P. Hájková, M. Hájek, P. Heras, M. Infante, M. Lebouvier, J. Marka, K. K. Newsham, R. Ochyra, J. Pantović, M. S. Sabovljević, N. Phephu, J. van Rooy, D. A. Philippov, R. D. Porley, F. Puche, A. Schäfer-Verwimp, J. G. Segarra-Moragues, C. Sérgio, V. R. Smith, S. Ştefănuţ, J. Váňa, and M. J. Wigginton. 2013. New national and regional bryophyte records, 37. *Journal of Bryology* 35(4): 290–305. https://doi.org/10.1179/1743282013Y.0000000073

Ellis, L. T., M. Aleffi, R. Tacchi, A. Alegro, M. Alonso, A. K. Asthana, V. Sahu, A. B. Biasuso, D. A. Callaghan, T. Ezer, R. Kara, T. Seyli, R. Garilleti, M. J. Gil-López, D. Gwynne-Evans, T. A. Hedderson, T. Kiebacher, J. Larraín, D. G. Long, M. Lüth, B. Malcolm, Y. S. Mamontov, and K. K. Newsham. 2014a. New national and regional bryophyte records, 41. *Journal of Bryology* 36(4): 306–324. https://doi.org/10.1179/10.1179/1743282014Y.0000000123

Ellis, L. T., M. Aleffi, A. K. Asthana, A. Srivastava, V. A. Bakalin, N. Batan, T. Özdemır, H. Bednarek-Ochyra, E. A. Borovichev, M. Brugués, M. J. Cano, S. S. Choi, D. De Beer, J. Eckstein, P. Erzberger, V. E. Fedosov, A. Ganeva, R. Natcheva, C. A. Garcia, C. Sérgio, R. Garilleti, B. Albertos, F. Puche, S. Gücel, M. Higuchi, V. Hugonnot, K. Hylander, M. Kırmacı, G. Aslan, T. Koponen, F. Lara, V. Mazimpaka, H. van Melick, F. Müller, H. Özenoglu Kiremit, B. Papp, E. Szurdoki, V. Plášek, L. Čihal, A. van der Pluijm, S. Poponessi, M. G. Mariotti, J. Reyniers, M. S. Sabovljević, J. Sawicki, V. R. Smith, A. Stebel, S. Ştefănuţ, B.-Y. Sun, J. Váňa, and R. Venanzoni. 2014b. New national and regional bryophyte records, 40. *Journal of Bryology* 36(3): 223–244. https://doi.org/10.1179/1743282014Y.0000000115

Ellis, L. T., M. Aleffi, V. A. Bakalin, H. Bednarek-Ochyra, A. Bergamini, P. Beveridge, S. S. Choi, V. E. Fedosov, R. Gabriel, M. T. Gallego, S. Grdović, R. Gupta, V. Nath, A. K. Asthana, L. Jennings, H. Kürschner, M. Lebouvier, M. C. Nair, K. M. Manjula, K. P. Rajesh, M. Nobis, A. Nowak, S. J. Park, B.-Y. Sun, V. Plášek, L. Číhal, S. Poponessi, M. G. Mariotti, A. Sabovljević, M. S. Sabovljević, J. Sawicki, N. Schnyder, R. Schumacker, M. Sim-Sim, D. K. Singh, D. Singh, S. Majumdar, S. Singh Deo, S. Ştefănuţ, M. Suleiman, C. M. Seng, M. S. Chua, J. Váňa, R. Venanzoni, E. Bricchi, and M. J. Wigginton. 2015a. New national and regional bryophyte records, 42. *Journal of Bryology* 37(1): 68–85. https://doi.org/10.1179/1743282014Y.0000000132

Ellis, L. T., C. Ah-Peng, S. C. Aranda, H. Bednarek-Ochyra, E. A. Borovichev, B. Cykowska-Marzencka, M. C. Duarte, J. Enroth, P. Erzberger, V. Fedosov, B. Fojcik, R. Gabriel, M. C. M. Coelho, D. S. G. Henriques, O. V. Ilina, J. E. Gil-Novoa, M. E. Morales-Puentes, S. R. Gradstein, R. Gupta, V. Nath, A. K. Asthana, A. Koczur, M. Lebouvier, A. Mesterházy, F. Mogro, A. Mežaka, Cs. Németh, J. D. Orgaz, Y. Sakamoto, J. Paiva, F. Sales, N. Pande, M. S. Sabovljević, J. Pantivić, A. D. Sabovljević, A. Pérez-Haase, D. P. Costa, V. Plášek, J. Sawicki, M. Szczecińska, J. Chmielewski, A. Potemkin, A. Schäfer-Verwimp, W. B. Schofield, C. Sérgio, M. Sim-Sim, S. Sjögren, D. Spitale, A. Stebel, S. Ştefănuţ, G. M. Suárez, J. R. Flores, L. Thouvenot, J. Váňa, Y.-J. Yoon, J. H. Kim, and R. Zubel. 2015b. New national and regional bryophyte records, 45. *Journal of Bryology* 37(4): 308–329. https://doi.org/10.1179/1743282015Y.0000000035

Ellis, L. T., A. K. Asthana, A. Srivastava, V. A. Bakalin, H. Bednarek- Ochyra, M. J. Cano, J. A. Jiménez, M. Alonso, J. Deme, J. Csiky, M. G. Dia, P. Campisi, P. Erzberger, R. Garilleti, K. V. Gorobets, N. J. M. Gremmen, M. S. Jimenez, G. M. Suárez, I. Jukonienė, T. Kiebacher, M. Kırmacı, A. Koczur, H. Kürschner, F. Lara, V. Mazimpaka, J. Larraín, M. Lebouvier, R. Medina, R. Natcheva, K. K. Newsham, M. Nobis, A. Nowak, M. Ören, A. D. Özc_eli, J. D. Orgaz, D. F. Peralta, V. Plášek, L. Číhal, R. Ristow, J. Sawicki, A. Schäfer-Verwimp, V. R. Smith, A. Stebel, S. Ştefănut, M. Subkaitė, B.-Y. Sun, A. Uselienė, G. Uyar, J. Váňa, Y.-J. Yoon, and S. J. Park. 2015c. New national and regional bryophyte records, 43. *Journal of Bryology* 37(2): 128–146. https://doi.org/10.1179/1743282015Y.0000000003

Ellis, L. T., E. Agcagil, M. Kırmacı, M. Aleffi, V. A. Bakalin, H. Bednarek-Ochyra, B. Cykowska-Marzencka, M. Stryjak- Bogacka, G. F. P. Bojaca, L. B. Fantacelle, C. A. T. Araújo, A. S. Maciel-Silva, J. Bruno Silva, J. A. Calleja, M. J.

Cano, J. Castillo Diaz, R. Gabriel, N. Dias dos Santos, J. Enroth, P. Erzberger, R. Garilleti, M. Hájek, L. Hedenäs, P. Heras, M. Infante, T. Kiebacher, A. Koczur, R. Krawczyk, J. Kučera, M. Lebouvier, M. Lüth, V. Mazimpaka, B. Vigalondo, F. Lara, J. Nagy, Cs. Németh, A. Kovács, M. Nobis, M. Węgrzyn, P. Wietrzyk, N. Norhazrina, A. Vanderpoorten, A. Nowak, S. Poponessi, D. Gigante, R. Venanzoni, V. Plášek, S. Rangel Germano, A. Schäfer-Verwimp, C. Sérgio, D. Claro, C. A. Garcia, S. Shirzadian, S. Akhoondi Darzikolaei, A. Stebel, M. Suleiman, K.-T. Yong, V. M. Virchenko, G. Vončina, Y.-J. Yoon, H.-G. Choi, and J. H. Kim. 2016a. New national and regional bryophyte records, 49. *Journal of Bryology* 38(4): 327–347. https://doi.org/10.1080/03736687.2016.1225777

Ellis, L. T., M. Alataş, A. K. Asthana, K. K. Rawat, V. Sahu, A. Srivastava, V. A. Bakalin, N. Batan, H. Bednarek-Ochyra, S. P. Bester, E. A. Borovichev, D. De Beer, J. Enroth, P. Erzberger, V. E. Fedosov, C. Feuillet-Hurtado, S. R. Gradstein, N. J. M. Gremmen, L. Hedenäs, T. Katagiri, T. Yamaguchi, M. Lebouvier, D. Maity, A. Mesterházy, F. Müller, R. Natcheva, Cs. Németh, J. Opisso, T. Özdemir, H. Erata, I. Parnikoza, V. Plášek, S. Sabovljević, A. D. Sabovljević, P. Saha, Md Nehal Aziz, W. Schröder, J. Váňa, J. van Rooy, J. Wang, Y. –J. Yoon, and J. H. Kim. 2016b. New national and regional bryophyte records, 47. *Journal of Bryology* 38(2): 151–167. https://doi.org/10.1080/03736687.2016.1171453

Ellis, L. T., C. Ah-Peng, M. Aleffi, K. Baráth, M. Brugués, E. Ruiz, W. R. Buck, I. V. Czernyadjeva, P. Erzberger, L. B. Fantecelle, G. F. Peñaloza-Bojacá, C. A. T. Araújo, B. A. Oliveira, A. S. Maciel-Silva, N. J. M. Gremmen, S.-L. Guo, T. A. Hedderson, E. February, N. Wilding, V. Hugonnot, M. Kırmacı, H. Kürschner, M. Lebouvier, A. Mesterházy, R. Ochyra, M. Philippe, V. Plášek, Z. Skoupá, S. Poponessi, D. Gigante, R. Venanzoni, K. K. Rawat, V. Sahu, A. K. Asthana, M. S. Sabovljević, A. D. Sabovljević, A. Schäfer-Verwimp, and S. Wierzcholska. 2017. New national and regional bryophyte records, 50. *Journal of Bryology* 39(1): 99–114. https://doi.org/10.1080/03736687.2016.1259931

Ellis, L. T., O. M. Afonina, M. Aleffi, R. L. Andriamiarisoa, M. Bačkor, M. Goga, H. Bednarek-Ochyra, D. A. Callaghan, P. Campisi, M. G. Dia, M. L. Marino, J. Enroth, P. Erzberger, V. Hugonnot, E. A. Ignatova, T. Kiebacher, J. Kučera, M. Lebouvier, G. M. Maria, S. Ştefănuţ, J. Nagy, T. Pócs, S. Poponessi, R. Venanzoni, D. Gigante, F. Prosser, C. Reeb, M. S. Sabovljević, J. R. Shevock, S. Shirzadian, S. Akhoondi Darzikolaei, E. R. F. Souza, A. Silva Pinto, J. B. Silva, S. F. Lopes, K. Torzewski, and A. Kazienko. 2018a. New national and regional records, 56. *Journal of Bryology* 40(3): 271–296. https://doi.org/10.1080/03736687.2018.1487687

Ellis, L. T., M. Aleffi, G. Asthana, C. Bhagat, V. A. Bakalin, K. Baráth, R. Becker, H. Bednarek-Ochyra, M. Boiko, M. R. Brito, C. Pimentel, M. Brugués, L. Sáez, P. Dřevojan, J. Enroth, P. Erzberger, V. E. Fedosov, S. Fontinha, E. Fuertes Lasala, R. Gabriel, M. Gallego, S. R. Gradstein, Th. Homm, V. Hugonnot, T. G. Ivchenko, K. G. Klimova, J. Kučera, P. Lamkowski, E. D. Lapshina, M. Lebouvier, A. L. López González, W.-Z. Ma, P. Manolaki, J. Monteiro, C. Vieira, A. P. Portela, M. Sim-Sim, A. I. Maksimov, N. Norhazrina, N. Syazwana, S. Asyifaa, S. Poponessi, R. Venanzoni, D. Gigante, F. Prosser, A. D. Potemkin, V. M. Kotkova, M. S. Sabovljević, A. D. Sabovljević, A. Schäfer-Verwimp, C. Sérgio, C. Garcia, J. R. Shevock, A. Stebel, J. Drobnik, G. Vončina, and Y.-M. Wei. 2018b. New national and regional bryophyte records, 57. *Journal of Bryology* 40(4): 399–419. https://doi.org/10.1080/03736687.2018.1523601

Ellis, L. T., O. M. Afonina, G. Ya. Doroshina, C. Agudelo, R. L. Andriamiarisoa, A. K. Asthana, D. Gupta, R. Gupta, K. K. Rawat, V. Sahu, P. Aymerich, H. Bednarek-Ochyra, M. Brugués, E. Ruiz, L. Sáez, D. A. Callaghan, S. Caspari, P. Drapela, O. D. Dugarova, D. Ya. Tubanova, P. Erzberger, J. R. Flores, G. M. Suárez, V. E. Fedosov, G. Gospodinov, S. R. Gradstein, C. Reeb, I. Jukonienė, M. Subkaitė, J. Kučera, G. E. Lee, Y. J. Lombo, K. Y. Suarez, M. Lebouvier, S. Majumdar, F. Müller, J. Nagy, N. Norhazrina, B. Papp, V. Plášek, T. Pócs, M. Puglisi, A. Schäfer-Verwimp, S. Shirzadian, D. K. Singh, S. Ştefănuţ, K. Torzewski, H. van Melick, G. J. Wolski, and R. H. Zander. 2019a. New national and regional bryophyte records, 58. *Journal of Bryology* 41(1): 63–84. https://doi.org/10.1080/03736687.2018.1559636

Ellis, L. T., L. A. Amélio, D. F. Peralta, M. Bačkor, E. Z. Baisheva, H. Bednarek-Ochyra, M. Burghardt, I. V. Czernyadjeva, S. S. Kholod, A. D. Potemkin, A. Erdağ, M. Kırmacı, V. E. Fedosov, M. S. Ignatov, D. E. Koltysheva, J. R. Flores, E. Fuertes, M. Goga, S.-L. Guo, W. K. Hofbauer, M. Kurzthaler, H. Kürschner, O. I. Kuznetsova, M. Lebouvier, D. G. Long, Yu. S. Mamontov, K. M. Manjula, C. N. Manju, B. Mufeed, F. Müller, M. C. Nair, M. Nobis, N. Norhazrina, M. Aisyah, G. E. Lee, M. Philippe, D. A. Philippov, V. Plášek, Z. Komínková, R. D. Porley, Yu. A. Rebriev, M. S. Sabovljević, A. M. de Souza, E. B. Valente, D. Spitale, P. Srivastava, V. Sahu, A. K. Asthana, S. Ştefănuţ, G. M. Suárez, A. A. Vilnet, K.-Y. Yao, and J.-Ch. Zhao. 2019b. New national and regional bryophyte records, 59. *Journal of Bryology* 41(2): 177–194. https://doi.org/10.1080/03736687.2019.1613112

Ellis, L. T., M. Aleffi, A. Bączkiewicz, K. Buczkowska, B. Bambe, M. Boiko, N. Zagorodniuk, G. Brusa, M. Burghardt, J. A. Calleja, V. Mazimpaka, F. Lara, V. E. Fedosov, N. J. M. Gremmen, T. Homm, V. Hugonnot, E. A. Ignatova, H. Klama, J. Kučera, E. Vicherová, P. Lamkowski, E. D. Lapshina, A. I. Maksimov, T. A. Maksimova, R. Ochyra, V. Plášek, L. Ya. Pleskach, S. Poponessi, R. Venanzoni, I. N. Pospelov, A. D. Potemkin, S. S. Kholod, L. Sáez, Yu. V. Skuchas, D. Spitale, P. Srivastava, I. Omar, A. K. Asthana, S. Ştefănuţ, K. Torzewski, V. M. Virchenko, M. Wierzgoń, and G. J. Wolski. 2019c. New national and regional bryophyte records, 61. *Journal of Bryology* 41(4): 364–384. https://doi.org/10.1080/03736687.2019.1673601

Ellis, L. T., O. M. Afonina, J. J. Atwood, H. Bednarek-Ochyra, M. Burghardt, S. Dragićević, S. Vuksanović, B. Espinoza- Prieto, J. Opisso, M. Goga, M. Bačkor, A. Graulach, V. Hugonnot, N. E. Koroleva, V. K. Chandini, C. N. Manju, B. Mufeed, R. Natcheva, N. Norhazrina, N. Syazwana, D. F. Peralta, V. Plášek, S. Yu. Popov, R. D. Porley, A. Rimac, A. Alegro, N. Vuković, N. Koletić, V. Šegota, M. S. Sabovljević, A. Schäfer-Verwimp, C. Sérgio, S. Ştefănut, M. A. Taha, U. Y. Abou-Salama, and G. J. Wolski. 2020. New national and regional bryophyte records, 62. *Journal of Bryology* 42(2): 195–208. https://doi.org/10.1080/03736687.2019.1706311

Ellis, L. T., C. Ah-Peng, G. Aslan, V. A. Bakalin, A. Bergamini, D. A. Callaghan, P. Campisi, F. M. Raimondo, S. S. Choi, J. Csiky, É. Csikyné Radnai, B. Cykowska-Marzencka, I. V. Czernyadjeva, Yu. M. Kalinina, O. M. Afonina, G. Domina, P. Drapela, V. E. Fedosov, E. Fuertes, R. Gabriel, M. Kubová, I. Soares Albergaria, G. Gospodinov, R. Natcheva, A. Graulich, T. Hedderson, E. Hernández-Rodríguez, V. Hugonnot, C. W. Hyun, M. Kırmacı, U. Çatak, S. Kubešová, J. Kučera, C. La Farge, J. Larraín, P. Martin, B. Mufeed, C. N. Manju, K. P. Rajesh, Cs. Németh, J. Nagy, N. Norhazrina, N. Syazwana, S. V. O'Leary, S. J. Park, A. P. Peña-Retes, A. Rimac, A. Alegro, V. Šegota, N. Koletić, N. Vuković, S. Rosadziński, J. A. Rosselló, M. S. Sabovljević, A. D. Sabovljević, A. Schäfer-Verwimp, C. Sérgio, A. V. Shkurko, D. Shyriaieva, V. M. Virchenko, M. Smoczyk, D. Spitale, P. Srivastava, I. Omar, A. K. Asthana, M. Staniaszek-Kik, A. Cienkowska, M.-M. Ştefănuţ, S. Ştefănuţ, G. Tamas, C.-C. Bîrsan, G.-R. Nicoară, M. C. Ion, T. Pócs, G. Kunev, E. I. Troeva, J. van Rooy, P. Wietrzyk-Pełka, M. H. Węgrzyn, G. J. Wolski, D. Bożyk, and A. Cienkowska. 2021. New national and regional bryophyte records, 65. *Journal of Bryology* 43(1): 67–91. https://doi.org/10.1080/03736687.2021.1878804

Ellis, L. T., O. M. Afonina, M. H. B. Alia, M. Burghardt, B. Cabezudo, M. J. Cano, A. C. Cottet, J. Csiky, J. Deme, P. Erzberger, M. Evangelista, E. A. Glazkova, D. Gómez-González, J. Guerra, J. A. Jiménez, E. Yu. Kuzmina, N. S. Liksakova, M. I. Messuti, R. Natcheva, N. Norhazrina, J. P. Pantović, B. Papp, A. D. Potemkin, E. Rodríguez-Quiel, M. S. Sabovljević, D. Spitale, S. Ştefănuţ, N. Syazwana, M. G. Tossou, and A. A. Vil'net. 2022a. New national and regional bryophyte records, 70. *Journal of Bryology* 44(2): 175–183. https://doi.org/10.1080/03736687.2022.2095145

Ellis, T. L., C. Arrocha, Á. Benítez, M. Beyrouthy, V. K. Chandini, I. V. Czernyadjeva, J. Deme, P. Erzberger, V. E. Fedosov, P. Górski, J. Guerra, V. Hugonnot, T. Lautenschläger, G. E. Lee, P. Mair, Yu. S. Mamontov, C. N. Manju, K. M. Manjula, A. Mesterházy, B. Mufeed, F. Müller, C. Neinhuis, Cs. Németh, R. R. Paul, T. Pócs, R. D. Porley, K. P. Rajesh, F. Raouf Fard, K. K. Rawat, E. Rodríguez-Quiel, A. Schäfer-Verwimp, S. Ştefănuţ, W. Tratter, I. Verwimp, A. A. Vilnet, I. M. Wolf & R. H. Zander. 2022b. New national and regional bryophyte records, 71. *Journal of Bryology* 44(3): 253–263. https://doi.org/10.1080/03736687.2022.2143223

Engel, J. J. 1972. The genus *Andrewsianthus* in South America and the Falkland Islands. *Bryologist* 75(3): 325–334. https://doi.org/10.2307/3241470

Engel, J. J. 1978. A taxonomic and phytogeographic study of Brunswick Peninsula (Strait of Magellan) Hepaticae and Anthocerotae. *Fieldiana, Botany* 41: 1–319. https://www.biodiversitylibrary.org/item/19954#page/15/mode/1up

Engel, J. J. 1980. A monograph of *Clasmatocolea* (Hepaticae). *Fieldiana, Botany*, n.s., 3: 1–229. https://www.biodiversitylibrary.org/item/20374#page/9/mode/1up

Engel, J. J. 1988. The taxonomic position of *Apotomanthus* (Hepaticae). *Beihefte zur Nova Hedwigia* 90: 203–221.

Engel, J. J. 1989. Index hepaticarum supplementum – 1980–1981. *Taxon* 38(3): 414–439. https://www.jstor.org/stable/1222273

Engel, J. J. 1990. Falkland Islands (Islas Malvinas) Hepaticae and Anthocerotophyta: A taxonomic and phytogeographic study. *Fieldiana, Botany*, n.s., 25: 1–209. https://www.biodiversitylibrary.org/item/20438#page/7/mode/1up

Engel, J. J. 2010. Austral Hepaticae. 45. A monograph of the genus *Chiloscyphus* Corda (Lophocoleaceae) for Australasia. *Fieldiana, Botany*, n.s., 48: 1–209. https://doi.org/10.3158/0015-0746-48.1.1

Engel, J. J., and D. Glenny. 2008. *A flora of the liverworts and hornworts of New Zealand*. Volume 1. Missouri Botanical Garden, St. Louis, 897 pp.

Engel, J. J., and S. R. Gradstein. 2003. Studies in Geocalycaceae XIV. *Physotheca* J. J. Engel & Gradst., a new genus of Hepaticae from Ecuador, belonging to a new subfamily, Geocalycaceae subfam. Physothecoideae J. J. Engel & Gradst. *Taxon* 52(4): 763–773. https://doi.org/10.2307/3647350

Engel, J. J., and R. M. Schuster. 1984. An overview and evaluation of the genera of Geocalycaceae subfamily Lophocoleoideae (Hepaticae). *Nova Hedwigia* 39: 385–463.

Engel, J. J., and G. L. Smith Merrill. 1997. Austral Hepaticae. 22. The genus *Balantiopsis* in New Zealand, with observations on extraterritorial taxa and a phylogeny of *Balantiopsis* and the family Balantiopsaceae (Jungermanniales). *Fieldiana, Botany*, n.s., 37: 1–62. https://www.biodiversitylibrary.org/item/20477#page/7/mode/1up

Engel, J. J., and G. L. Smith Merrill. 1998. Austral Hepaticae. 25. *Krunodiplophyllum* Grolle and a revision of the Australasian species of *Diplophyllum* (Dum.) Dum. (Scapaniaceae, Jungermanniales). *Journal of the Hattori Botanical Laboratory* 84: 241–283. https://doi.org/10.18968/jhbl.84.0_241

Engel, J. J., and G. L. Smith Merrill. 2004. Austral Hepaticae. 35. A taxonomic and phylogenetic study of *Telaranea* (Lepidoziaceae), with a monograph of the genus in temperate Australasia and commentary on extra-Australasian taxa. *Fieldiana, Botany*, n.s., 44: 1–265. https://doi.org/10.3158/0015-0746(2004)445b1:AHATAP5d2.0.CO;2

Enroth, J. 1991. On the phytogeography of Western Melanesian Hepaticae. A literature review. *Journal of the Hattori Botanical Laboratory* 70: 1–42. https://doi.org/10.18968/jhbl.70.0_1

Equihua, C., and T. Pócs. 1999. Epiphyllous bryophytes from Lacandon Forest, Chiapas, Mexico. *Bryologist* 102(4): 747–752. https://doi.org/10.2307/3244260

Escolástico-Oriz, D. A., and C. Juárez-Martínez. 2018. *Notothylas javanica* (Anthocerotophyta: Notothyladaceae): nuevo registro para la brioflora de México [*Notothylas javanica* (Anthocerotophyta: Notothyladaceae): a new record for the bryoflora of Mexico]. *Acta Botanica Mexicana* 123: 183–190. https://doi.org/10.21829/abm123.2018.1287

Evans, A. W. 1900a. The Hawaiian Hepaticae of the tribe Jubuloideae. *Transactions of the Connecticut Academy of Arts and Sciences* 10(8): 387–462. https://www.biodiversitylibrary.org/item/48107#page/417/mode/1up

Evans, A. W. 1900b. Notes on Hepaticae collected in Alaska. *Proceedings of the Washington Academy of Sciences* 2: 287–314. https://www.biodiversitylibrary.org/item/35745#page/345/mode/1up

Evans, A. W. 1902a. Hepaticae (in B. L. Robinson, *Flora of the Galapagos Islands*). *Proceedings of the American Academy of Arts and Sciences* 38(4): 100–101. https://www.biodiversitylibrary.org/item/22276#page/114/mode/1up

Evans, A. W. 1902b. The Lejeuneae of the United States and Canada. *Memoirs of the Torrey Botanical Club* 8(2): 113–183. https://www.biodiversitylibrary.org/item/98766#page/142/mode/1up

Evans, A. W. 1902c. Hepaticae of Puerto Rico. I. The species of *Leptolejeunea* including an account of their vegetative reproduction. *Bulletin of the Torrey Botanical Club* 29(8): 496–510. https://doi.org/10.2307/2478871

Evans, A. W. 1903a. Hepaticae of Puerto Rico. II. *Drepanolejeunea*. *Bulletin of the Torrey Botanical Club* 30(1): 19–41. https://doi.org/10.2307/2478645

Evans, A. W. 1903b. Yukon Hepaticae. *Ottawa Naturalist* 17(1): 13–24. https://www.biodiversitylibrary.org/item/28109#page/19/mode/1up

Evans, A. W. 1903c. Hepaticae of Puerto Rico. III. *Harpalejeunea*, *Cyrtolejeunea*, *Euosmolejeunea* and *Trachylejeunea*. *Bulletin of the Torrey Botanical Club* 30(10): 544–563. https://doi.org/10.2307/2478516

Evans, A. W. 1904. Hepaticae of Puerto Rico. IV. *Odontolejeunea*, *Cyclolejeunea* and *Prionolejeunea*. *Bulletin of the Torrey Botanical Club* 31(4): 183–226. https://doi.org/10.2307/2478687

Evans, A. W. 1905a. Hepaticae of Puerto Rico. V. *Ceratolejeunea*. *Bulletin of the Torrey Botanical Club* 32(6): 273–290. https://doi.org/10.2307/2478810

Evans, A. W. 1905b. New or noteworthy Hepaticae from Florida. *Bulletin of the Torrey Botanical Club* 32(4): 179–192. https://doi.org/10.2307/2478831

Evans, A. W. 1906a. The Hepaticae of Bermuda. *Bulletin of the Torrey Botanical Club* 33(3): 129–135. https://doi.org/10.2307/2478823

Evans, A. W. 1906b. Hepaticae of Puerto Rico. VI. *Cheilolejeunea*, *Rectolejeunea*, *Cystolejeunea*, and *Pycnolejeunea*. *Bulletin of the Torrey Botanical Club* 33(1): 1–25. https://doi.org/10.2307/2478618

Evans, A. W. 1907a. *Leucolejeunea*, a new genus of Hepaticae. *Torreya* 7(12): 225–229. https://www.jstor.org/stable/40594562

Evans, A. W. 1907b. Hepaticae of Puerto Rico. VIII. *Symbiezidium*, *Marchesinia*, *Mastigolejeunea*, *Caudalejeunea* and *Bryopteris*. *Bulletin of the Torrey Botanical Club* 34(11): 533–568. https://doi.org/10.2307/2479269

Evans, A. W. 1907c. Hepaticae of Puerto Rico. VII. *Stictolejeunea*, *Neurolejeunea*, *Omphalanthus*, and *Lopholejeunea*. *Bulletin of the Torrey Botanical Club* 34(1): 1–34. https://doi.org/10.2307/2479163

Evans, A. W. 1908a. New West Indian Lejeuneae. *Bulletin of the Torrey Botanical Club* 35(8): 371–389. https://doi.org/10.2307/2479284

Evans, A. W. 1908b. The synonymy of three American Hepaticae. *Bryologist* 11(4): 67–70. https://doi.org/10.2307/3237469

Evans, A. W. 1908c. Hepaticae of Puerto Rico. IX. *Brachiolejeunea*, *Ptychocoleus*, *Archilejeunea*, *Leucolejeunea*, and *Anoplolejeunea*. *Bulletin of the Torrey Botanical Club* 35(4): 155–179. https://doi.org/10.2307/2478953

Evans, A. W. 1909. Notes on New England Hepaticae, – VII. *Rhodora* 11(130): 185–195. https://www.biodiversitylibrary.org/item/14482#page/219/mode/1up

Evans, A. W. 1910. Vegetative reproduction in *Metzgeria*. *Ann. Bot. (Oxford)* 24(2): 271–303. https://doi.org/10.1093/oxfordjournals.aob.a089267

Evans, A. W. 1911a. Hepaticae of the Bahama Islands. *Bulletin of the Torrey Botanical Club* 38(5): 205–222. https://doi.org/10.2307/2479386

Evans, A. W. 1911b. Hepaticae of Puerto Rico. X. *Cololejeunea*, *Leptocolea* and *Aphanolejeunea*. *Bulletin of the Torrey Botanical Club* 38(6): 251–286. https://doi.org/10.2307/2479100

Evans, A. W. 1912a. Hepaticae of Puerto Rico. XI. *Diplasiolejeunea*. *Bulletin of the Torrey Botanical Club* 39(5): 209–225. https://doi.org/10.2307/2479376

Evans, A. W. 1912b. Notes on North American Hepaticae. III. *Bryologist* 15(4): 54–63. https://doi.org/10.2307/3237690

Evans, A. W. 1912c. New West Indian Lejeuneae – II. *Bulletin of the Torrey Botanical Club* 39(12): 603–611. https://doi.org/10.2307/2479587

Evans, A. W. 1913. Notes on North American Hepaticae. IV. *Bryologist* 16(4): 49–55. https://doi.org/10.2307/3238381

Evans, A. W. 1914a. Notes on North American Hepaticae. V. *Bryologist* 17(6): 87–92. https://doi.org/10.2307/3238891

Evans, A. W. 1914b. Hepaticae: Yale Peruvian Expedition of 1911. *Transactions of the Connecticut Academy of Arts and Sciences* 18(5): 291–345. https://www.biodiversitylibrary.org/item/32542#page/379/mode/1up

Evans, A. W. 1915. The genus *Plagiochasma* and its North American species. *Bulletin of the Torrey Botanical Club* 42(5): 259–308. https://doi.org/10.2307/2479766

Evans, A. W. 1917a. The American species of *Marchantia*. *Transactions of the Connecticut Academy of Arts and Sciences* 21(3): 201–213. https://www.biodiversitylibrary.org/item/32301#page/235/mode/1up

Evans, A. W. 1917b. A new *Lejeunea* from Bermuda and the West Indies. *Bulletin of the Torrey Botanical Club* 44(11): 525–528. https://doi.org/10.2307/2479506

Evans, A. W. 1918. Noteworthy *Lejeuneae* from Florida. *American Journal of Botany* 5(3): 131–150. https://doi.org/10.1002/j.1537-2197.1918.tb05489.x

Evans, A. W. 1919a. Three South American species of *Asterella*. *Bulletin of the Torrey Botanical Club* 46(12): 469–480. https://doi.org/10.2307/2480391

Evans, A. W. 1919b. A taxonomic study of *Dumortiera*. *Bulletin of the Torrey Botanical Club* 46(5): 167–182. https://doi.org/10.2307/2480346

Evans, A. W. 1920. The North American species of *Asterella*. *Contributions from the United States National Herbarium* 20(8): 247–312. https://www.biodiversitylibrary.org/item/13780#page/279/mode/1up

Evans, A. W. 1921a. The genus *Riccardia* in Chile. *Transactions of the Connecticut Academy of Arts and Sciences* 25(2): 97–209. https://www.biodiversitylibrary.org/item/32397#page/171/mode/1up

Evans, A. W. 1921b. *Taxilejeunea pterogonia* and certain allied species. *Bulletin of the Torrey Botanical Club* 48(4): 107–136. https://doi.org/10.2307/2480341

Evans, A. W. 1922. Notes on North American Hepaticae. IX. *Bryologist* 25(2): 25–33. https://doi.org/10.2307/3237567

Evans, A. W. 1923a. The Chilean species of *Metzgeria*. *Proceedings of the American Academy of Arts and Sciences* 58(7): 271–324. https://doi.org/10.2307/20025995

Evans, A. W. 1923b. Notes on North American Hepaticae. X. *Bryologist* 26(6): 55–67. https://doi.org/10.2307/3238024

Evans, A. W. 1925. The lobate species of *Symphyogyna*. *Transactions of the Connecticut Academy of Arts and Sciences* 27(1): 1–50.

Evans, A. W. 1927. A further study of the American species of *Symphyogyna*. *Transactions of the Connecticut Academy of Arts and Sciences* 28(6): 301–353.

Evans, A. W. 1932. A new species of *Plagiochasma* from Texas. *American Journal of Botany* 19(7): 627–631. https://doi.org/10.1002/j.1537-2197.1932.tb08847.x

Evans, A. W. 1935. The anatomy of the stem in the Lejeuneae (concluded). *Bulletin of the Torrey Botanical Club* 62(5): 259–280. https://doi.org/10.2307/2480836

Fagundes, D. N., A. C. C. Tavares-Martins, A. L. Ilkiu-Borges, N. R. E. Moraes, and R. C. P. Santos. 2016. Riqueza e aspectos ecológicos das comunidades de briófitas (Bryophyta e Marchantiophyta) de um fragmento de Floresta de Terra Firme no Parque Ecológico de Gunma, Pará, Brasil [Richness and ecological aspects of bryophyte communities (Bryophyta and Marchantiophyta) of a fragment of terra firme forests in Gunma Ecological Park, municipality of Santa Barbara, Pará, Brazil]. *Iheringia, Botânica* 71(1): 72–84. https://isb.emnuvens.com.br/iheringia/article/view/490

Feldberg, K., and J. Heinrichs. 2005a. Some new synonyms of *Herbertus sendtneri* (Nees) Lindb. (Jungermanniideae: Herbertaceae) from the Neotropics. *Cryptogamie, Bryologie* 26: 411–416. https://sciencepress.mnhn.fr/en/periodiques/bryologie/26/4/Some20new20synonyms20of20Herbertus20sen dtneri20(Nees) 20Lindb. 20(Jungermanniidae: 20Herbertaceae)

Feldberg, K., and J. Heinrichs. 2005b. On the identity of *Herbertus borealis* (Jungermanniopsida: Herbertaceae), with notes on the possible origin of *H. sendtneri*. *Journal of Bryology* 27(4): 343–350. https://doi.org/10.1179/174328205X72496

Feldberg, K., and J. Heinrichs. 2006. A taxonomic revision of *Herbertus* (Jungermanniidae: Herbertaceae) in the Neotropics based on nuclear and chloroplast DNA and morphology. *Botanical Journal of the Linnean Society* 151: 309–332. https://doi.org/10.1111/j.1095-8339.2006.00534.x

Feldberg, K., H. Groth, R. Wilson, A. Schäfer-Verwimp, and J. Heinrichs. 2004. Cryptic speciation in *Herbertus* (Herbertaceae, Jungermanniopsida): Range and morphology of *Herbertus sendtneri* inferred from nr ITS sequences. *Plant Systematics and Evolution* 249: 247–261. https://doi.org/10.1007/s00606-004-0221-4

Feldberg, K., J. Hentschel, R. Wilson, D. S. Rycroft, D. Glenny, and J. Heinrichs. 2007. Phylogenetic biogeography of the leafy liverwort *Herbertus* (Jungermanniales, Herbertaceae) based on nuclear and chloroplast DNA sequence data: Correlation between genetic variation and geographical distribution. *Journal of Biogeography* 34: 688–698. https://doi.org/10.1111/j.1365-2699.2006.01623

Feldberg, K., J. Váňa, J. Hentschel, and J. Heinrichs. 2010a. Currently accepted species and new combinations in Jamesonielloideae (Adelanthaceae, Jungermanniales). *Cryptogamie, Bryologie* 31(2): 141–146. https://sciencepress.mnhn.fr/en/periodiques/bryologie/31/2/currently-accepted-species-and-new-combinations-jamesonielloideae-adelanthaceae-jungermanniales

Feldberg, K., J. Váňa, D. G. Long, A. J. Shaw, J. Hentschel, and J. Heinrichs. 2010b. A phylogeny of Adelanthaceae (Jungermanniales, Marchantiophyta) based on nuclear and chloroplast DNA markers, with comments on classification, cryptic speciation and biogeography. *Molecular Phylogenetics and Evolution* 55(1): 293–304. https://doi.org/10.1111/10.1016/j.ympev.2009.11.009

Feldberg, K., J. Váňa, R.-L. Zhu, and J. Heinrichs. 2010c. The systematic position of *Pedinophyllum* (Marchantiophyta: Jungermanniales). *Cryptogamie, Bryologie* 31(2): 125–133. https://sciencepress.mnhn.fr/en/periodiques/bryologie/31/2/systematic-position- pedinophyllum-marchantiophyta-jungermanniales

Feldberg, K., J. Váňa, C. Schulze, A. Bombosch, and J. Heinrichs. 2011. Morphologically similar but genetically distinct: On the differentiation of *Syzygiella concreta* and *S. perfoliata* (Adelanthaceae subfam. Jamesonielloideae). *Bryologist* 114(4): 686–695. https://doi.org/10.1111/10.1639/0007-2745-114.4.686

Feldberg, K., J. Heinrichs, A. R. Schmidt, J. Váňa, and H. Schneider. 2013. Exploring the impact of fossil constraints on the divergence time estimates of derived liverworts. *Plant Systematics and Evolution* 299(3): 585–681. https://doi.org/10.1007/s00606-012-0745-y

Feldberg, K., H. Schneider, T. Stadler, A. Schäfer-Verwimp, A. R. Schmidt, and J. Heinrichs. 2014. Epiphytic leafy liverworts diversified in angiosperm-dominated forests. *Scientific Reports* 4(5974): 1–6. https://doi.org/10.1038/srep05974

Feldberg, K., J. Váňa, J. Krusche, J. Kretschmann, S. D. F. Patzak, O. A. Pérez-Escobar, N. R. Rudolf, N. Seefelder, A. Schäfer-Verwimp, D. G. Long, H. Schneider, and J. Heinrichs. 2016. A phylogeny of Cephaloziaceae (Jungermanniopsida) based on nuclear and chloroplast DNA markers. *Organisms, Diversity and Evolution* 16(4): 727–742. https://doi.org/10.1007/s13127-016-0284-4

Feldberg, K., J. Váňa, A. Schäfer-Verwimp, M. Krings, C. Gröhn, A. R. Schmidt, and J. Heinrichs. 2017. Problems related to the taxonomic placement of incompletely preserved amber fossils: Transfer of the Paleogene liverwort *Cylindrocolea dimorpha* (Cephaloziellaceae) to the extant *Odontoschisma* sect. *Iwatsukia* (Cephaloziaceae). *Fossil Record* 20: 147–157. https://doi.org/10.5194/fr-20-147-2017

Fernandes, R. S., J. A. S. Silva, F. P. Ottoni, and D. P. Costa. 2021. Diversity of thalloid liverworts in Brazilian Savanna of Parque Nacional da Chapada das Mesas, Maranhão, Brazil. *Checklist* 17(1): 45–58. https://doi.org/10.15560/17.1.45

Fischer, E. 2013. Liverworts and hornworts of Rwanda. *ABC Taxa* 14: 1–552. http://www.abctaxa.be/volumes/volume-14-liverworts-and-hornworts-rwanda

Fischer, E., and A. Vanderpoorten. 2010. New records for the liverwort flora of Gabon, with a description of *Ceratolejeunea kuerschneri*, sp. nov. (Lejeuneaceae, Jungermanniopsida). *Nova Hedwigia Beiheft* 138: 85–97.

Flores, J. R., and G. M. Suárez. 2015. *Plagiochasma intermedium* Lindenb. & Gotische [sic] (Aytoniaceae, Marchantiophyta), the third species of *Plagiochasma* for southern South America. *Cryptogamie, Bryologie* 36(1): 75–80. https://doi.org/10.7872/cryb.v36.iss1.2015.75

Flores, J. R., M. J. von Konrat, J. Larraín, and G. M. Suárez. 2017. Disjunct or continuous? On the distributional pattern of *Cephaloziella hampeana* (Nees) Schiffn. ex Loeske (Cephaloziellaceae, Marchantiophyta) in South America. *Cryptogamie, Bryologie* 38(1): 53–59. https://doi.org/10.7872/cryb/v38.iss1.2017.53

Forrest, L., and B. J. Crandall-Stotler. 2004. A phylogeny of the simple thalloid liverworts (Jungermanniopsida, Metzgeriidae) as inferred from five chloroplast genes. *Monographs in Systematic Botany from the Missouri Botanical Garden* 98: 119–140.

Forrest, L., and B. J. Crandall-Stotler. 2005. Progress towards a robust phylogeny for the liverworts, with particular focus on the simple thalloids. *Journal of the Hattori Botanical Laboratory* 97: 127–159. https://doi.org/10.18968/jhbl.97.0_127

Forrest, L. L., E. C. Davis, D. G. Long, B. J. Crandall-Stotler, A. Clark, and M. L. Hollingsworth. 2006. Unravelling the evolutionary history of the liverworts (Marchantiophyta): Multiple taxa, genomes and analyses. *Bryologist* 109(3): 303–334. https://doi.org/10.1639/0007-2745(2006)1095b303:UTEHOT5d2.0.CO;2

Forrest, L. L., N. Salazar Allen, J. A. Gudiño, H. Korpelainen, and D. G. Long. 2011. Molecular and morphological evidence for distinct species in *Dumortiera* (Dumortieraceae). *Bryologist* 114(1): 102–115. https://doi.org/10.1639/0007-2745-114.1.102

Forster, J. R., and G. Forster. 1776. *Characteres generum plantarum, ed. 2*. White, Cadell et Elmsly, London, 150 pp. https://doi.org/10.5962/bhl.title.4448

Fosberg, F. R., and W. L. Klawe. 1966. Preliminary list of plants from Cocos Island. In *The Galápagos: Proceedings of the Symposia of the Galápagos International Scientific Project*, ed. R. I. Bowman, pp. 187–189. University of California Press, Berkeley.

Fossatti, I., C. J. P. Bastos, and Á. Benítez. 2020. *Ceratolejeunea panamensis* (Lejeuneaceae, Marchantiophyta), a new species from Panama. *Phytotaxa* 459(3): 248–251. https://doi.org/10.11646/phytotaxa.459.3.6

Frahm, J.-P. 1990. Bryophyte phytomass in tropical ecosystems. *Botanical Journal of the Linnean Society* 104(1/3): 23–33. https://doi.org/10.1111/j.1095-8339.1990.tb02209.x

Frahm, J.-P. 2012a. Mosses and liverworts of the Chocó region, Colombia. *Archive für Bryologie* 123: 1–14. http://www.archive-for-bryology.com

Frahm, J.-P. 2012b. Additions to the bryoflora of the Dominican Republic. *Archive für Bryologie* 138: 1–20. http://publikationen.ub.uni-frankfurt.de/frontdoor/index/index/docId/35208

Freire, A. V. 2002. *A revision of the genus* Fossombronia *in Latin America*. Southern Illinois University, Carbondale, IL, 275 pp.

Freire, A. V. 2006. Biodiversidad de hepáticas y antocerotes en Guatemala. In *Biodiversidad de Guatemala*, ed. E. B. Cano, pp. 55–68. Universidad de Valle de Guatemala, Guatemala City.

Freire, A. V., M. Pérez, and F. Ramírez. 2005. *Distribución de las hepáticas presentes en el sendero interpretativo "los musgos," del Biotopo Universitario para la Conservación del Quetzal "Lic. Mario Dary Rivera" Purulhá, Baja Verapaz, Guatemala*. Universidad de San Carlos de Guatemala, Guatemala City, 39 pp. https://digi.usac.edu.gt/bvirtual/informes/puirna/INF- 2004-015.pdf

Freire, V., M. Pérez, and F. Ramírez. 2012. Biodiversidad de hepáticas y antocerotes de Guatemala II. In *Biodiversidad de Guatemala,* Volume 2, ed. E. B. Cano and J. C. Schuster, pp. 1–8. Universidad de Valle de Guatemala, Guatemala City.

Freire, A. V., M. Pérez, F. Ramírez, and M. V. Ríos. 2013. Hepatic flora of a Guatemalan cloud forest. *Tropical Bryology* 35: 1–13. https://doi.org/10.11646/13487

Frey, W., and H. Kürschner. 1983. Contributions towards a bryophyte flora of Iran, new records from Iran. *Iranian Journal of Botany* 2: 13–19. https://dorl.net/dor/20.1001.1.1029788.1362.2.1.3.2

Frye, T. C., and L. Clark. 1937. Hepaticae of North America. *University of Washington Publications in Biology* 6(1): 1–161.

Frye, T. C., and L. Clark. 1946. Hepaticae of North America, part IV. *University of Washington Publications in Biology* 6(4): 565–733.

Frye, T. C., and L. Clark. 1947. Hepaticae of North America, part V. *University of Washington Publications in Biology* 6(5): 735–1022.

Fuertes, E., and C. Prada. 2014. New record and additions to the Argentinean bryophyte flora [Nueva cita y novedades para la flora briofítica argentina]. *Darwiniana*, n.s., 2(1): 68–73. http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S0011-67932014000100004&lng=en&nrm=iso&tlng=en

Fuertes, E., and C. Prada. 2020. Aportaciones a la brioflora subantártica de la Argentina: Hepáticas foliosas (Jungermaniidae, Marchantiophyta) [Contributions to the neotropical bryoflora from the Argentina: Leafy liverworts (Jungermanniidae, Marchantiophyta)]. *Botanica Complutensis* 44: 61–72. https://doi.org/10.5209/bocm.71646

Fulford, M. 1938. Some Lejeuneaceae from British Honduras. *Annales Bryologici* 11: 56–57. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=8173&Pagina=66

Fulford, M. 1941a. Studies on American Hepaticae I. Revision of the genus *Thysananthus*. *Bulletin of the Torrey Botanical Club* 68(1): 32–42. https://doi.org/10.2307/2481253

Fulford, M. 1941b. Studies on American Hepaticae—III. Vegetative reproduction in *Bryopteris fruticulosa*. *Bulletin of the Torrey Botanical Club* 68(9): 636–639. https://doi.org/10.2307/2481253

Fulford, M. 1942a. Studies on American Hepaticae IV. Revision of the genus *Symbiezidium*. *Lloydia* 5(4): 293–304.

Fulford, M. 1942b. Sporelings and vegetative reproductive structures in *Archilejeunea*. *Bryologist* 45(6): 173–175. https://doi.org/10.2307/3239140

Fulford, M. 1944. Studies on American Hepaticae V. Two nomenclatural changes in *Ceratolejeunea*. *Bulletin of the Torrey Botanical Club* 71(6): 637. https://www.jstor.org/stable/2481300

Fulford, M. 1945. Studies on American Hepaticae VI. *Ceratolejeunea*. *Brittonia* 5(4): 368–403. https://doi.org/10.2307/2804890

Fulford, M. 1946. The genus *Bazzania* in Central and South America. *Annales Cryptogamici et Phytopathologici* 3: 1–175. http://www.archive.org/stream/genusbazzaniainc029113mbp/genusbazzaniainc029113mbp_djvu.txt

Fulford, M. 1958. The Machris Brazilian expedition. *Los Angeles County Museum Contributions in Science* 26: 1–2. https://doi.org/10.5962/p.241058

Fulford, M. 1959a. Studies on American Hepaticae. 7–8. A supplement to "The genus *Bazzania* in Central and South America." Part 1. Introduction and the subgenus *Bidentatae*. *Bulletin of the Torrey Botanical Club* 86(5): 308–341. https://doi.org/10.2307/2482503

Fulford, M. 1959b. Studies on American Hepaticae. 9–11. A supplement to "The genus *Bazzania* in Central and South America," II. *Tridentatae* (3–5). *Bulletin of the Torrey Botanical Club* 86(6): 394–412. https://doi.org/10.2307/2482645

Fulford, M. 1962. Segregate genera of the *Lepidozia* complex (Hepaticae). Part 3. *Microlepidozia* Jörg. And *Micrisophylla* gen. nov. *Brittonia* 14(1): 121–136. https://doi.org/10.2307/2805325

Fulford, M. 1963a. Manual of the leafy Hepaticae of Latin America I. *Memoirs of the New York Botanical Garden* 11(1): 1–172. https://www.biodiversitylibrary.org/item/150914#page/7/mode/1up

Fulford, M. 1963b. Segregate genera of the *Lepidozia* complex (Hepaticae). Part 4. *Telaranea* and a review of the Lepidoziaceae. *Brittonia* 15(1): 65–85. https://doi.org/10.2307/2805041

Fulford, M. 1966. Manual of the leafy Hepaticae of Latin America II. *Memoirs of the New York Botanical Garden* 11(2): 173–276. https://www.biodiversitylibrary.org/item/150914#page/187/mode/1up

Fulford, M. 1967. Hepaticae (in J. A. Steyermark, *Flora del Auyan-tepui Flora del Auyan-tepui*). *Acta Botánica Venezuelica* 2(5/8): 72–99. https://www.jstor.org/stable/41740412

Fulford, M. 1968. Manual of the leafy Hepaticae of Latin America III. *Memoirs of the New York Botanical Garden* 11(3): 277–392. https://www.biodiversitylibrary.org/item/150914#page/295/mode/1up

Fulford, M. 1972. Hepaticae (in J. A. Steyermark, and B. Maguire, *The flora of the Meseta del Cerro Jaua*). *Memoirs of the New York Botanical Garden* 23: 838–845.

Fulford, M. 1976. Manual of the leafy Hepaticae of Latin America IV. *Memoirs of the New York Botanical Garden* 11(4): 395–535.

Fulford, M. 1987. Leafy Hepaticae of Dominica: Additions to the Hepaticae Elliottianae by Richard Spruce in 1895. *Memoirs of the New York Botanical Garden* 45: 264–278.

Fulford, M., and R. E. Hatcher. 1961. The genus *Triandrophyllum* – some nomenclatural changes. *Bryologist* 64(4): 348–351. https://doi.org/10.2307/3240856

Fulford, M., and A. J. Sharp. 1990. The leafy Hepaticae of Mexico: One hundred and twenty-seven years after C. M. Gottsche. *Memoirs of the New York Botanical Garden* 63: 1–86.

Fulford, M., and J. Taylor. 1961. Segregate genera of the *Lepidozia* complex (Hepaticae). Part 2. Two new genera, *Bonneria* and *Paracromastigum*. *Brittonia* 13(4): 334–339. https://doi.org/10.2307/2805411

Fulford, M., B. Crandall, and R. Stotler. 1970. The ecology of an elfin forest in Puerto Rico, 11. The leafy Hepaticae of Pico del Oeste. *Journal of the Arnold Arboretum* 51(1): 56–69. https://www.biodiversitylibrary.org/item/41431#page/62/mode/1up

Garcia, C., C. Sérgio, J. C. Villarreal, M. Sim-Sim, and F. Lara. 2012. The hornworts *Dendroceros* Nees and *Megaceros* Campb. In São Tomé e Príncipe (Africa, Gulf of Guinea) with the description of *Dendroceros paivae* sp. nov. *Cryptogamie, Bryologie* 33(1): 3–21. https://doi.org/10.7872/cryb.v33.iss1.2012.003

Garrido, A., J. Gudiño, A. A. Durant-Archibold, N. Salazar Allen, J. C. Villarreal, and M. P. Gupta. 2019. Chemical profiling of volatile components of the gametophyte and sporophyte stages of the hornwort *Leiosporoceros dussii* (Leiosporocerotaceae) from Panama by HS-SPME-GC-MS. *Natural Product Communications* 14(8): 1–4. https://doi.org/.10.1177/1934578X19868875

Geffert, J. L., J.-P. Frahm, W. Barthlott, and J. Mutke. 2013. Global moss diversity: Spatial and taxonomic patterns of species richness. *Journal of Bryology* 35(1): 1–11. https://doi.org/10.1179/1743282012Y.0000000038

Geissler, P. 1997. On epiphyllous populations of *Marchesinia* (Lejeuneaceae, Hepaticae). *Abstracta Botanica (Budapest)* 21(1): 65–67. https://www.jstor.org/stable/43519205

Geissler, P., and H. Bischler. 1985. *Index hepaticarum. Volume 10:* Lembidium *to* Mytilopsis. J. Cramer, Berlin, 352 pp.

Geissler, P., and H. Bischler. 1987. *Index hepaticarum. Volume 8/9:* Jungermannia *to* Lejeunites. J. Cramer, Berlin, 310 pp.

Geissler, P., and H. Bischler. 1989. *Index hepaticarum. Volume 11:* Naiadea *to* Pycnoscenus. J. Cramer, Berlin, 353 pp.

Geissler, P., and H. Bischler. 1990. *Index hepaticarum. Volume 12:* Racemigemma *to* Zoopsis. J. Cramer, Berlin, 337 pp.

Geissler, P., and S. R. Gradstein. 1994. On the identity of *Phragmicoma lehmanniana* Nees and other species described in the genus *Phragmicoma* (Studies in Lejeuneaceae subfam. Ptychanthoideae. 23). *Journal of the Hattori Botanical Laboratory* 75: 201–209. https://doi.org/10.18968/jhbl.75.0_201

Geist, H. J., and E. F. Lambin. 2001. *What drives tropical deforestation?* LUCC Report Series No. 4. University of Louvain, Louvian-la-Neuve, Belgium, 116 pp.

Gepp, A. 1895. Hepaticae Elliottianae, insulis Antillanis St Vincentii et Dominica a clar. W. R. Elliott, annis 1891–92, lectae, Richard Spruce determinatae. *Journal of the Linnean Society. Botany* 30(210): 331–372. https://doi.org/10.1111/j.1095-8339.1894.tb02416.x

Germano, S. R. 2003. *Florística e ecologia das comunidades de briófitas em um remanescente de floresta atlântica (reserva ecológica de Gurjau, Pernambuco, Brasil).*, Recife, 120 pp.

Germano, S. R., and K. C. Pôrto. 2005. A bryophyte checklist of the ecological reserve of Gurjaú, Pernambuco, Brazil. *Tropical Bryology* 26: 1–12. https://doi.org/10.11646/bde.26.1.3

Gerson, U. 1982. Bryophytes and invertebrates. In *Bryophyte Ecology*, ed. A. J. E. Smith, pp. 291–332. Chapman & Hall, London. https://doi.org/10.1007/978-94-009-5891-3_9

Gignac, L. D. 2001. Bryophytes as indicators of climate change. *Bryologist* 104(3): 410–420. https://doi.org/10.1639/0007-2745(2001)104[0410:BAIOCC]2.0.CO;2

Giordano, S., S. Sorbo, P. Adamo, A. Basile, V. Spagnuolo, and R. C. Cobianchi. 2004. Biodiversity and trace element content of epiphytic bryophytes in urban and extraurban sites of southern Italy. *Plant Ecology* 170(1): 1–14. https://doi.org/10.1023/B:VEGE.0000019025.36121.5d

Goebel, K. I. 1889. *Pflanzenbiologische Schilderungen 1.* N. G. Elwert'sche Verlagsbuchhandlung, Marlburg, 236 pp. https://doi.org/10.5962/bhl.title.1665

Goebel, K. I. 1893a. Archegoniatenstudien. 3. Rudimentäre Lebermoose. *Flora* 77(2): 82–103. https://www.biodiversitylibrary.org/item/266079#page/94/mode/1up

Goebel, K. I. 1893b. Archegoniatenstudien. 5. Die Blattbildung der Lebermoose und ihre biologische Bedeutung. *Flora* 77: 423–459. https://www.biodiversitylibrary.org/item/266079#page/445/mode/1up

Goebel, K. I. 1928. Morphologische und Biologische Studien XII-XV. *Annales du Jardin Botanique de Buitenzorg* 39: 1–232.

Gómez, L. D. 1982. The origin of the pteridophyte flora of Central America. *Annals of the Missouri Botanical Garden* 69(3): 548–556. https://doi.org/10.2307/2399083

Gómez, L. D. 1986. *Vegetación de Costa Rica*. Volume 1. EUNED, Costa Rica. 327 p.

Gottsche, C. M. 1856. Plantae Muellerianae: Hepaticae Australiae. *Linnaea* 28(5): 547–561. https://www.biodiversitylibrary.org/item/109605#page/555/mode/1up

Gottsche, C. M. 1857. Pugillus novarum hepaticarum. *Annales des Sciences Naturelles, Botanique*, sér. 4, 8: 318–348. https://www.biodiversitylibrary.org/item/129817#page/322/mode/1up

Gottsche, C. M. 1858. Uebersicht und kritische Würdigung der seit dem Erscheinen der Synopsis Hepaticarum bekannt gewordenen Leistungen in der Hepaticologie. *Bot. Zeitung (Berlin) Beil.* 16: 1–54. http://books.google.de/books?id=3_IUAAAAYAAJ&printsec=titlepage&dq=Botanische+Zeitung+1858&source=gbs_sum mary_r&cad=0#PPR1,M1

Gottsche, C. M. 1863. *De Mexikanske Levermosser.* Bianco Lunos Bogtrykkeri, Kjøbenhavn, 285 pp. https://plants.jstor.org/stable/10.5555/al.ap.visual.nymlc03101

Gottsche, C. M. 1864. Hepaticae (in J. J. Triana, and J. E. Planchon, *Prodromus florae novo-granatensis*). *Annales des Sciences Naturelles, Botanique*, sér. 5, 1: 95–198. https://doi.org/10.5962/bhl.title.5385

Gottsche, C. M. 1882. Reliquiae Rutenbergianae. Lebermoose. *Abhandlungen Herausgegeben vom Naturwissenschaftlichen Vereins zu Bremen* 7(3): 335–365. https://www.biodiversitylibrary.org/item/105780#page/343/mode/1up

Gottsche, C. M., and L. Rabenhorst. 1873. *Hepaticae Europaeae. Die Lebermoose Europa's unter Mitwirkung mehrerer namhafter Botaniker, decades 56–57.* Dresden, pp. 551–570.

Gottsche, C. M., J. B. W. Lindenberg, and C. G. Nees. 1843. Hepaticae. In *Observationes botanicas in itinere circum terram institutas*, ed. F. J. F. Meyen. *Novorum Actorum Academia Caesareae Leopoldinae-Carolinae Germinicae Naturae Curiosorum* 19 [suppl. 1]: 469–477.

Gottsche, C. M., J. B. G. Lindenberg, and C. G. Nees von Esenbeck. 1844. *Synopsis hepaticarum*. Fasc. 1. Meissner, Hamburg, pp. 1–144. https://doi.org/10.5962/bhl.title.15221

Gottsche, C. M., J. B. G. Lindenberg, and C. G. Nees von Esenbeck. 1845a. *Synopsis hepaticarum*. Fasc. 3. Meissner, Hamburg, pp. 305–464. https://doi.org/10.5962/bhl.title.15221

Gottsche, C. M., J. B. G. Lindenberg, and C. G. Nees von Esenbeck. 1845b. *Synopsis hepaticarum*. Fasc. 2. Meissner, Hamburg, pp. 145–304. 10. https://doi.org/10.5962/bhl.title.15221

Gottsche, C. M., J. B. G. Lindenberg, and C. G. Nees von Esenbeck. 1846. *Synopsis hepaticarum*. Fasc. 4. Meissner, Hamburg, pp. 465–624. https://doi.org/10.5962/bhl.title.15221

Gottsche, C. M., J. B. G. Lindenberg, and C. G. Nees von Esenbeck. 1847. *Synopsis hepaticarum*. Fasc. 5. Meissner, Hamburg, pp. 625–834. https://doi.org/10.5962/bhl.title.15221

Gradstein, S. R. 1974. Studies on Lejeuneaceae subfam. Ptychanthoideae. I. Nomenclature and taxonomy of *Ptychocoleus*, *Acrolejeunea* and *Schiffneriolejeunea*. *Journal of the Hattori Botanical Laboratory* 38: 327–336.

Gradstein, S. R. 1975. A taxonomic monograph of the genus *Acrolejeunea* (Hepaticae), with an arrangement of the genera of Ptychanthoideae. *Bryophytorum Bibliotheca* 4: 1–162.

Gradstein, S. R. 1977. Studies on Lejeuneaceae subfam. Ptychanthoideae (Hepaticae) IV. *Verdoornianthus*, a new genus from Amazonas, Brazil. *Bryologist* 80(4): 606–611. https://doi.org/10.2307/3242417

Gradstein, S. R. 1985a. A revision of the genus *Stictolejeunea* (Spruce) Schiffn. *Beiheft zur Nova Hedwigia* 80: 195–220.

Gradstein, S. R. 1985b. A guide to the holostipous Lejeuneaceae. *Beiheft zur Nova Hedwigia* 80: 13–29.

Gradstein, S. R. 1987. The Ptychanthoideae of Latin America: An overview (studies on Lejeuneaceae subfamily Ptychanthoideae XVI). *Bryologist* 90(4): 337–343. https://doi.org/10.2307/3243095

Gradstein, S. R. 1989. A key to the Hepaticae and Anthocerotae of Puerto Rico and the Virgin Islands. *Bryologist* 92(3): 329–348. https://doi.org/10.2307/3243402

Gradstein, S. R. 1992a. The vanishing tropical rain forest as an environment for bryophytes and lichens. In *Bryophytes and lichens in a changing environment*, ed. J. W. Bates and A. M. Farmer, pp. 234–258. Clarendon Press, Oxford, U.K.

Gradstein, S. R. 1992b. The genera *Thysananthus*, *Dendrolejeunea*, and *Fulfordianthus* gen. nov. (Studies on Lejeuneaceae subfamily Ptychanthoideae. XXI). *Bryologist* 95(1): 42–51. https://doi.org/10.2307/3243402

Gradstein, S. R. 1992c. Threatened bryophytes of the neotropical rain forest: A status report. *Tropical Bryology* 6: 83–93. https://doi.org/10.11646/BDE.6.1.10

Gradstein, S. R. 1993. A decade of neotropical exsiccates. *Tropical Bryology* 7: 77–85. https://doi.org/10.11646/BDE.7.1.8

Gradstein, S. R. 1994. Lejeuneaceae: Ptychantheae, Brachiolejeuneae. *Flora Neotropica, Monograph* 62: 1–216. https://www.jstor.org/stable/4393845

Gradstein, S. R. 1998. Hepatic diversity in the neotropical Páramos. *Monographs in Systematic Botany from the Missouri Botanical Garden* 68: 69–86.

Gradstein, S. R. 1999a. Hepatics (in J. L. Luteyn, *Páramos, a checklist of plant diversity, geographical distribution and botanical literature*). *Memoirs of the New York Botanical Garden* 84: 65–73.

Gradstein, S. R. 1999b. On the rediscovery of *Spruceanthus theobromae* (Lejeuneaceae, Hepaticae), an endangered species on cacao trees in western Ecuador. *Bryobrothera* 5: 81–86.

Gradstein, S. R. 2012. On the identity of *Jungermannia obscura*. *Cryptogamie, Bryologie* 33(3): 257–262. https://doi.org/10.7872/cryb.v33.iss3.2012.257

Gradstein, S. R. 2013a. Notes on Early Land Plants Today. 22. New combinations and new synonymy in *Omphalanthus* and *Aureolejeunea* (Lejeuneaceae, Marchantiophyta). *Phytotaxa* 76(3): 45–47. https://doi.org/10.11646/phytotaxa.76.3.10

Gradstein, S. R. 2013b. Afro-American hepatics revisited. *Polish Botanical Journal* 58(1): 149–177. https://doi.org/10.2478/pbj-2013-0016

Gradstein, S. R. 2013c. Notes on Early Land Plants Today. 21. On *Archilejeunea herminieri* (Lejeuneaceae, Marchantiophyta). *Phytotaxa* 76(3): 43–44. https://doi.org/10.11646/phytotaxa.76.3.9

Gradstein, S. R. 2015a. New synonyms and new lectotypifications in neotropical *Plagiochila* (Marchantiophyta). *Cryptogamie, Bryologie* 36(4): 369–379. https://doi.org/10.7872/cryb/v36.iss4.2015.369

Gradstein, S. R. 2015b. Annotated key to the species of *Plagiochila* (Marchantiophyta) from Brazil. *Pesquisas, Botânica* 67: 23–36. http://www.anchietano.unisinos.br/publicacoes/botanica/volumes/067/002.pdf

Gradstein, S. R. 2016. The genus *Plagiochila* (Marchantiophyta) in Colombia. *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales* 40(154): 104–136. https://doi.org/10.18257/raccefyn.272

Gradstein, S. R. 2017a. *Bazzania* (Marchantiophyta) in South America. *Nova Hedwigia* 105(1/2): 243–266. https://doi.org/10.1127/nova_hedwigia/2017/0409

Gradstein, S. R. 2017b. Amphitropical disjunctive species in the complex thalloid liverworts (Marchantiidae). *Journal of Bryology* 39(1): 66–78. https://doi.org/10.1080/03736687.2016.1189662

Gradstein, S. R. 2021. The liverworts and hornworts of Colombia and Ecuador. *Memoirs of the New York Botanical Garden* 121: 1–723. https://doi.org/10.1007/978-3-030-49450-6

Gradstein, S. R., and C. J. P. Bastos. 2019. *Plagiochila eggersii*, a rare neotropical species new to Brazil. *Rodriguésia* 70(e01452018): 1–3. https://doi.org/10.1590/2175-7860201970073

Gradstein, S. R., and C. J. P. Bastos. 2021. On the identity of *Cheilolejeunea choachina* (Marchantiophyta: Lejeuneaceae) with description of two new species of *Cheilolejeunea* from the Neotropics. *Nova Hedwigia* 112(1/2): 75–89. https://doi.org/10.1127/nova_hedwigia/2021/0648

Gradstein, S. R., and Á. Benitez. 2017. Liverworts new to Ecuador with description of *Plagiochila priceana* sp. nov. and *Syzygiella burghardtii* sp. nov. *Cryptogamie, Bryologie* 38(4): 335–348. https://doi.org/10.7872/cryb/v38.iss4.2017.335

Gradstein, S. R., and G. M. Buskes. 1985. A revision of neotropical *Archilejeunea* (Spruce) Schiffn. *Beiheft zur Nova Hedwigia* 80: 89–112.

Gradstein, S. R., and D. P. Costa. 2003. The Hepaticae and Anthocerotae of Brazil. *Memoirs of the New York Botanical Garden* 87: 1–316.

Gradstein, S. R., and J. Cuvertino. 2015. Observations on the liverwort flora of the surroundings of Santiago, central Chile. *Cryptogamie, Bryologie* 36(2): 129–141. https://doi.org/10.7872/cryb.v36.iss2.2015.129

Gradstein, S. R., and P. Geissler. 1997. Notes on the genus *Leucolejeunea* (Hepaticae). *Cryptogamie, Bryologie Lichénol.* 18(3): 177–182. https://www.biodiversitylibrary.org/item/291596#page/17/mode/1up

Gradstein, S. R., and W. H. A. Hekking. 1979. Studies on Colombian cryptogams. IV. A catalogue of the Hepaticae of Colombia. *Journal of the Hattori Botanical Laboratory* 45: 93–144.

Gradstein, S. R., and W. H. A. Hekking. 1989. A catalogue of the bryophytes of the Guianas. I. Hepaticae and Anthocerotae. *Journal of the Hattori Botanical Laboratory* 66: 197–230. https://doi.org/10.18968/jhbl.66.0_197

Gradstein, S. R., and I. H. Holz. 2005. Briófitas de los páramos de Costa Rica. In *Páramos de Costa Rica*, ed. M. Kappelle and S. P. Horn, pp. 361–374. Instituto Nacional de Biodiversidad, Santo Domingo de Heredia.

Gradstein, S. R., and A. L. Ilkiu-Borges. 2009. Guide to the plants of central French Guiana, part 4. Liverworts and hornworts. *Memoirs of the New York Botanical Garden* 76(4): 1–140.

Gradstein, S. R., and A. L. Ilkiu-Borges. 2015. A taxonomic revision of the genus *Odontoschisma* (Marchantiophyta: Cephaloziaceae). *Nova Hedwigia* 100(1/2): 15–100. https://doi.org/10.1127/nova_hedwigia/2014/0219

Gradstein, S. R., and H. Inoue. 1980. Studies on Lejeuneaceae subfam. Ptychanthoideae, V. A review of the species from Ceylon. *Bulletin of the National Science Museum, Tokyo, Series B, Botany* 6(1): 23–32.

Gradstein, S. R., and E. Lavocat Bernard. 2020. An evaluation of the endemic bryophyte flora of Guadeloupe [Évaluation de la bryoflore endémique de la Guadeloupe]. *Cryptogamie, Bryologie* 41(15): 205–214. https://doi.org/10.5252/cryptogamie-bryologie2020v41a15

Gradstein, S. R., and S. León-Yánez. 2011. Briofitas. In *Libro rojo de las plantas endémicas del Ecuador, ed. 2*, ed. S. León-Yánez, R. Valencia, N. Pitman, L. Endara, C. Ulloa Ulloa, and H. Navarrete, pp. 867–879. Publicaciones del Herbario QCA, Pontificia Universidad Católica del Ecuador, Quito.

Gradstein, S. R., and Á. J. Pérez. 2021. In the footsteps of Michel Allioni: Liverworts and hornworts from the surroundings of Gualaquiza (Ecuador) [Siguiendo los pasos de Michel Allioni: hepáticas y antocerotes de los alrededores de Gualaquiza (Ecuador)]. *Candollea* 76: 41–54. https://doi.org/10.15553/c2021v761a3

Gradstein, S. R., and T. Pócs. 2021. Diversity of liverworts and hornworts in *Polylepis sericea* forests in the Andes of Venezuela. *Nova Hedwigia* 112(1/2): 49–68. https://doi.org/10.1127/nova_hedwigia/2021/0612

Gradstein, S. R., and C. Reeb. 2018. The genus *Riccardia* (Aneuraceae) in Colombia and Ecuador. *Cryptogamie, Bryologie* 39(4): 515–540. https://doi.org/10.7872/cryb/v39.iss4.2018.515

Gradstein, S. R., and M. E. Reiner-Drehwald. 1995. *Szweykowskia*, a new genus of Plagiochilaceae (Hepaticae) from tropical America. *Fragmenta Floristica et Geobotanica* 40(1): 31–38.

Gradstein, S. R., and M. E. Reiner-Drehwald. 2007. The status of *Neopotamolejeunea* (Lejeuneaceae) and description of a new species from Ecuador and southern Brazil. *Systematic Botany* 32(3): 487–492. https://doi.org/10.1600/036364407782250571

Gradstein, S. R., and N. Salazar Allen. 1992. Bryophyte diversity along an altitudinal gradient in Darién National Park, Panamá. *Tropical Bryology* 5: 61–71. https://doi.org/10.11646/bde.5.1.10

Gradstein, S. R., and A. Schäfer-Verwimp. 2011. A new species of *Harpalejeunea* (Spruce) Schiffn. (Lejeuneaceae) from montane cloud forest of Colombia and Costa Rica. *Cryptogamie, Bryologie* 32(2): 101–106. https://doi.org/10.7872/cryb.v32.iss1.2011.101

Gradstein, S. R., and J. Uribe. 2011. A synopsis of the Frullaniaceae (Marchantiophyta) from Colombia [Sinopsis de la familia Frullaniaceae (Marchantiophyta) para Colombia]. *Caldasia* 33(2): 367–396. https://www.jstor.org/stable/23642023

Gradstein, S. R., and J. Uribe. 2016. Marchantiophyta (liverworts). In *Catálogo de plantas y líchenes de Colombia,* Volume I, ed. R. Bernal, S. R. Gradstein, and M. Celis, pp. 282–352. Universidad Nacional de Colombia, Unibiblos, Bogotá.

Gradstein, S. R., and J. Váňa. 1987. On the occurrence of Laurasian liverworts in the Tropics. *Memoirs of the New York Botanical Garden* 45: 388–425.

Gradstein, S. R., and J. Váňa. 1994. A boreal bryophyte community in a tropical montane forest of Mexico. *Tropical Bryology* 9: 31–34. https://doi.org/10.11646/bde.9.1.6

Gradstein, S. R., and J. Váňa. 1999. On the taxonomy of *Kymatocalyx* and *Stenorrhipis* (Cephaloziellaceae). *Haussknechtia, Beiheft* 9: 155–170.

Gradstein, S. R., and J. van Beek. 1985. A revision of the genus *Symbiezidium* Trevis. *Beiheft zur Nova Hedwigia* 80: 221–249.

Gradstein, S. R., and W. A. Weber. 1982. Bryogeography of the Galapagos Islands. *Journal of the Hattori Botanical Laboratory* 52: 127–152.

Gradstein, S. R., A. M. Cleef, and M. Fulford. 1977. Studies on Colombian cryptogams. IIA–C. Hepaticae – oil body structure and ecological distribution of selected species of tropical Andean Jungermanniales. *Proceedings, Koninklijke Nederlandse Akademie van Wetenschappen, Series C, biological and medical sciences* 80: 377–420.

Gradstein, S. R., T. Pócs, and J. Váňa. 1983. Disjunct Hepaticae in tropical America and Africa. *Acta Botanica Hungarica* 29(1/4): 127–171.

Gradstein, S. R., R. Klein, L. Kraut, R. Mues, J. Spörle, and H. Becker. 1992. Phytochemical and morphological support for the existence of two species in *Monoclea* (Hepaticae). *Plant Systematics and Evolution* 180(1/2): 115–135. https://doi.org/10.1007/BF00940401

Gradstein, S. R., R. Grolle, and A. Schäfer-Verwimp. 1993. Two interesting species of Lejeuneaceae from Brazil. *Journal of the Hattori Botanical Laboratory* 74: 59–70. https://doi.org/10.18968/jhbl.74.0_59

Gradstein, S. R., A. Lücking, M. I. Morales, and G. Dauphin. 1994. Additions to the hepatic flora of Costa Rica. *Lindbergia* 19(2/3): 73–86. https://www.jstor.org/stable/20149870

Gradstein, S. R., D. Griffin, M. I. Morales, and N. Nadkarni. 2001a. Diversity and habitat differentiation of mosses and liverworts in the cloud forest of Monteverde, Costa Rica. *Caldasia* 23(1): 203–212. https://www.jstor.org/stable/23641822

Gradstein, S. R., S. P. Churchill, and N. Salazar Allen-Allen. 2001b. Guide to the bryophytes of tropical America. *Memoirs of the New York Botanical Garden* 86: 1–577.

Gradstein, S. R., M. I. Meneses, and B. A. Arbe. 2003. Catalogue of the Hepaticae and Anthocerotae of Bolivia. *Journal of the Hattori Botanical Laboratory* 93: 1–67. https://doi.org/10.18968/jhbl.93.0_1

Gradstein, S. R., J. Uribe, A. Acebey, C. Bock, and T. Krömer. 2006a. Catalogue of the plants of Colombia: Marchantiophyta. In *Catálogo de las plantas de Colombia, version preliminar. Volume 1: Liquenes-Laxmanniaceae*, ed. R. Bernal, S. R. Gradstein, and M. Celis, pp. 787–1619. Bogotá.

Gradstein, S. R., R. Wilson, A. L. Ilkiu-Borges, and J. Heinrichs. 2006b. Phylogenetic relationships and neotenic evolution of *Metzgeriopsis* (Lejeuneaceae) based on chloroplast DNA sequences and morphology. *Botanical Journal of the Linnean Society* 151(3): 293–308. https://doi.org/10.1111/j.1095-8339.2006.00531.x

Gradstein, S. R., A. L. Ilkiu-Borges, and A. Vanderpoorten. 2011. Habitat specialization triggers the evolution of unusual morphologies: The case of *Cololejeunea stotleriana* sp. nov. from Ecuador. *Bryologist* 114(1): 9–22. https://doi.org/10.1639/0007-2745-114.1.9

Gradstein, S. R., S. C. Aranda, and A. Vanderpoorten. 2014. Notes on Early Land Plants Today. 47. Transfer of *Iwatsukia* to *Odontoschisma* (Cephaloziaceae, Marchantiophyta). *Phytotaxa* 162(4): 232–233. https://doi.org/10.11646/phytotaxa.162.4.6

Gradstein, S. R., C. Morales, M. A. Negritto, and J. G. Duckett. 2016. New records of liverworts and hornworts from the Sierra Nevada de Santa Marta, Colombia. *Cryptogamie, Bryologie* 37(4): 463–475. https://doi.org/10.7872/cryb/v37.iss4.2016.463

Gradstein, S. R., A. Vanderpoorten, G. van Reenen, and A. Cleef. 2018a. Mass occurrence of the liverwort *Herbertus sendtneri* in a glacial lake in the Andes of Colombia [Presencia masiva de la hepática *Herbertus sendtneri* en una laguna glaciar en los Andes de Colombia]. *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales* 42(164): 221–229. https://doi.org/10.18257/raccefyn.666

Gradstein, S. R., J. Uribe, J. E. Gil, C. Morales, and M. A. Negritto. 2018b. Liverworts new to Colombia. *Caldasia* 40(1): 82–90. https://doi.org/10.15446/caldasia.v40n1.68077

Gradstein, S. R., A. L. Ilkiu-Borges, and F. R. Oliveira-da-Silva. 2022. The genus *Radula* Dumort. (Marchantiophyta: Radulaceae) in Madagascar, with a key to the tropical African species. *Nova Hedwigia* 115(3–4): 349–382. https://doi.org/10.1127/nova_hedwigia/2022/0721

Graham, J. G., M. Fischer, and T. Pócs. 2016. Bryoflora and landscapes of the eastern Andes of central Peru: I. Liverworts of the El Sira communal reserve. *Acta Biologica Plantarum Agriensis* 4: 3–60. https://doi.org/10.21406/abpa.2016.4.3

Gray, A. 1846. Sullivant's muscology. *American Journal of Science and Arts*, ser. 2, 1(1): 70–81. https://www.biodiversitylibrary.org/item/51994#page/82/mode/1up

Gray, S. F. 1821. *Natural arrangement of British plants*. Volume 1. Baldwin, Craddock, and Joy, London, 824 pp. https://doi.org/10.5962/bhl.title.43804

Greville, R. K. 1825. Descriptions of some new plants belonging to the order Musci and Hepaticae. *Annals of the Lyceum of Natural History of New York* 1(2): 271–278. https://www.biodiversitylibrary.org/item/54048#page/299/mode/1up

Griffin, D. G., III, D. A. Breil, M. L. Morales, and D. Eakin. 1974. Observations on a bryophyte community of the Poás Volcano, Costa Rica. *Miscellanea Bryologica et Lichenologica* 6(10): 174–175.

Grolle, R. 1960a. Nachtrag zur "Revision der *Clasmatocolea*-Arten." *Revue Bryologie Lichénologique* 29(1/2): 68–91. https://www.biodiversitylibrary.org/item/281503#page/72/mode/1up

Grolle, R. 1960b. Notulae hepaticologicae I.-II.-III. *Revue Bryologie Lichénologique* 29(3/4): 207–211. https://www.biodiversitylibrary.org/item/281503#page/214/mode/1up

Grolle, R. 1961. Notulae hepaticologicae IV.-V.-VI. *Revue Bryologie Lichénologique* 30(1/2): 80–84. https://www.biodiversitylibrary.org/item/281510#page/92/mode/1up

Grolle, R. 1962a. Monographie der Lebermoosgattung *Leptoscyphus* Mitt. *Nova Acta Leopoldina* 25(161): 1–143.

Grolle, R. 1962b. *Goebelobryum*, eine neue marsupiale Lebermoosgattung. *Journal of the Hattori Botanical Laboratory* 25: 135–144.

Grolle, R. 1963a. Notulae hepaticologicae VII-IX. *Revue Bryologie Lichénologique* 32(1/4): 157–165. https://www.biodiversitylibrary.org/item/281551#page/173/mode/1up

Grolle, R. 1963b. Über *Kurzia* v. Martens. *Revue Bryologie Lichénologique* 32(1/4): 166–180. https://www.biodiversitylibrary.org/item/281551#page/182/mode/1up

Grolle, R. 1963c. Zwei Gattungen der Lophoziaceae neu für Afrika. *Transactions of the British Bryological Society* 4(3): 437–445. https://doi.org/10.1179/006813863804812363

Grolle, R. 1964a. *Neesioscyphus* – eine neue Lebermoosgattung mit gedrehten Sporogonklappen. Österreichische *Botanische Zeitschrift* 111(1): 19–36. https://doi.org/10.1007/BF01373318

Grolle, R. 1964b. *Temnoma-Blepharostoma* Miszellen. *Journal of the Hattori Botanical Laboratory* 27: 47–50.

Grolle, R. 1964c. Miscellanea hepaticologica 11–20. *Journal of Japanese Botany* 39(6): 173–178. http://www.jjbotany.com/pdf/JJB_039_173-178.pdf

Grolle, R. 1964d. Notulae hepaticologicae X-XIII. *Revue Bryologie Lichénologique* 33(1/2): 224–229. https://www.biodiversitylibrary.org/item/281552#page/234/mode/1up

Grolle, R. 1964e. Miscellanea hepaticologica 21–30. *Journal of Japanese Botany* 39(8): 236–241. http://www.jjbotany.com/pdf/JJB_039_236-241.pdf

Grolle, R. 1964f. Notulae Hepatilogicae XV. Neue Notizen über *Kurzia* v. Mart. Und Verwandte. *Journal of Japanese Botany* 39(3): 79–81. http://www.jjbotany.com/pdf/JJB_039_79-81.pdf

Grolle, R. 1965a. Über *Gymnanthe concinna* und *Lethocolea*. *Botanical Magazine, Tokyo* 78(921): 79–84. https://doi.org/10.15281/jplantres1887.78.79

Grolle, R. 1965b. Miscellanea hepaticologica 41–50. *Journal of Japanese Botany* 40(7): 206–219. http://www.jjbotany.com/pdf/JJB_040_206_219.pdf

Grolle, R. 1965c. Miscellanea hepaticologica 31–40. *Journal of the Hattori Botanical Laboratory* 28: 101-106.

Grolle, R. 1966a. Notulae hepaticologicae XIV. Zwei weitere *Neesioscyphus*-Arten. *Revue Bryologie Lichénologique* 34(1/2): 182–186. https://www.biodiversitylibrary.org/item/281571#page/197/mode/1up

Grolle, R. 1966b. Über *Diplasiolejeunea* in Asien. *Feddes Repertorium* 73(2): 78–89. https://doi.org/10.1002/fedr.19660730203

Grolle, R. 1966c. Miscellanea hepaticologica 51–60. *Journal of Japanese Botany* 41(5): 141–147. http://www.jjbotany.com/pdf/JJB_041_141-147.pdf

Grolle, R. 1966d. Die Lebermoose Nepals. *Khumbu Himal* 1(4): 262–298. https://doi.org/10.1007/978-3-642-92914-4_5

Grolle, R. 1968a. Miscellanea hepaticologica 81–90. *Transactions of the British Bryological Society* 5(3): 541–547. https://doi.org/10.1179/006813868804146863

Grolle, R. 1968b. Eine neue *Syzygiella* aus Bolivien. *Bryologist* 71(4): 354–356. https://doi.org/10.2307/3241121

Grolle, R. 1968c. Monographie der Gattung *Nowellia*. *Journal of the Hattori Botanical Laboratory* 31: 20–49.

Grolle, R. 1968d. Lebermoose aus Neuguinea. 7. Vierte Fundliste. *Journal of the Hattori Botanical Laboratory* 31: 1–12.

Grolle, R. 1969a. Großdisjunktionen in Artarealen Lateinamerikanischer Lebermoose. *Monographiae Biologicae* 19: 562–582.

Grolle, R. 1969b. Miscellanea hepaticologica 101–110. Österreichische *Botanische Zeitschrift* 117(1): 1–6. https://doi.org/10.1007/BF01376933

Grolle, R. 1971a. *Jamesoniella* und Verwandte. *Feddes Repertorium* 82(1): 1–100. https://doi.org/10.1002/fedr.19710820102

Grolle, R. 1971b. Hepaticopsida. In *Marion and Prince Edward Islands. Report on the South African Biological and Geological Expedition 1965–1966*, ed. E. M. van Zinderen Bakker Sr., J. M. Winterbottom, and R. A. Dyer, pp. 228–236. A. A. Balkema, Cape Town, South Africa.

Grolle, R. 1972a. *Bazzania* in Europa und Makaronesien. Zur Taxonomie und Verbreitung. *Lindbergia* 1(3/4): 193–204. https://www.jstor.org/stable/20149179

Grolle, R. 1972b. Miscellanea hepaticologica 121–130. *Journal of the Hattori Botanical Laboratory* 36: 547–551.

Grolle, R. 1972c. Zur Kenntnis von *Adelanthus* Mitt. *Journal of the Hattori Botanical Laboratory* 35: 325–370.

Grolle, R. 1972d. The hepatics of South Sandwich Islands and South Georgia. *British Antarctic Survey Bulletin* 28: 83–95. https://bas.ac.uk/documents/bas_bulletins/bulletin28_09.pdf

Grolle, R. 1976. *Drepanolejeunea* subgen. *Kolpolejeunea* – eine neue Untergattung aus der Palaeotropis. *Journal of the Hattori Botanical Laboratory* 40: 191–216.

Grolle, R. 1977a. *Pictolejeunea* – eine neue Gattung der Lejeuneoideae aus der Neotropis und Borneo. *Feddes Repertorium* 88(4): 247–256. https://doi.org/10.1002/fedr.19770880402

Grolle, R. 1977b. Miscellanea hepaticologica 161–170. *Journal of Bryology* 9(4): 529–538. https://doi.org/10.1179/jbr.1977.9.4.529

Grolle, R. 1979a. Miscellanea hepaticologica 181–190. *Journal of the Hattori Botanical Laboratory* 45: 173–183.

Grolle, R. 1979b. Miscellanea hepaticologica 191–200. *Journal of the Hattori Botanical Laboratory* 46: 337–355.

Grolle, R. 1981. Miscellanea hepaticologica 211–220. *Journal of the Hattori Botanical Laboratory* 49: 85–92.

Grolle, R. 1984a. Miscellanea hepaticologica 221–230. *Journal of the Hattori Botanical Laboratory* 55: 501–511.

Grolle, R. 1984b. Zur Kenntnis der Lejeuneoideae in Cuba (1): *Cyclolejeunea*. *Wissenschaftliche Zeitschrift der Friedrich-Schiller-Universität Jena. Mathematisch-naturwissenschaftliche Reihe* 33: 759–764.

Grolle, R. 1985. Miscellanea hepaticologica 231–240. *Journal of the Hattori Botanical Laboratory* 58: 197–202.

Grolle, R. 1987. Miscellanea hepaticologica 251–260. *Journal of the Hattori Botanical Laboratory* 63: 437–443. https://doi.org/10.18968/jhbl.63.0_437

Grolle, R. 1988. Miscellanea hepaticologica 261–270. *Journal of the Hattori Botanical Laboratory* 65: 403–410. https://doi.org/10.18968/jhbl.65.0_403

Grolle, R. 1989a. Miscellanea hepaticologica 271–280. *Journal of the Hattori Botanical Laboratory* 67: 249–254. https://doi.org/10.18968/jhbl.67.0_249

Grolle, R. 1989b. *Adelanthus* on Mt. Roraima. *Journal of the Hattori Botanical Laboratory* 67: 243–247. https://doi.org/10.18968/jhbl.67.0_243

Grolle, R. 1989c. Über *Asterella* subg. *Brachyblepharis* in Lateinamerika. *Wissenschaftliche Zeitschrift der Friedrich-Schiller-Universität Jena. Mathematisch-naturwissenschaftliche Reihe* 38(2): 231–239.

Grolle, R. 1991. Miscellanea hepaticologica 281–290. *Journal of the Hattori Botanical Laboratory* 69: 185–194. https://doi.org/10.18968/jhbl.69.0_185

Grolle, R. 1992. Zwei neue Arten der Lebermoosgattung *Diplasiolejeunea* aus der Neotropis. *Beiträge zur Phytotaxonomie* 15: 105–110.

Grolle, R. 1993. Taxonomic results of the BRYOTROP expedition to Zaire and Rwanda. 9. Pallaviciniaceae, Haplomitriaceae. *Tropical Bryology* 8: 75–82. https://doi.org/10.11646/BDE.8.1.10

Grolle, R. 1995. The Hepaticae and Anthocerotae of the East African Islands. An annotated catalogue. *Bryophytorum Bibliotheca* 48: 1–178.

Grolle, R. 2002. The Hepaticae and Anthocerotae of the subantarctic and temperate islands in the eastern Southern Hemisphere (90°E to 0°): An annotated catalogue. *Journal of Bryology* 24(1): 57–80. https://doi.org/10.1179/037366802125000359

Grolle, R., and J. Heinrichs. 1999. Redescription and synonymy of *Plagiochila aerea* Taylor 1846 (Hepaticae), first described as *Lycopodium pinnatum* by Lamarck 1792. *Nova Hedwigia* 68(3/4): 511–526. https://doi.org/10.1127/nova.hedwigia/68/1999/511

Grolle, R., and S. Piippo. 1986. Bryophyte flora of the Huon Peninsula, Papua New Guinea. XVI. Pallaviciniaceae (Hepaticae). *Acta Botanica Fennica* 133: 59–79.

Grolle, R., and E. Reiner-Drehwald. 1997. *Cheilolejeunea oncophylla* (Ångstr.) Grolle & Reiner comb. Nov. (Lejeuneaceae), from the Neotropics. *Journal of Bryology* 19(4): 781–785. https://doi.org/10.1179/jbr.1997.19.4.781

Grolle, R., and E. Reiner-Drehwald. 1999. Review of the genus *Harpalejeunea* (Lejeuneaceae) including the description of *H. grandis*, a new species from the páramos of Colombia. *Journal of Bryology* 21(1): 31–45. https://doi.org/10.1179/jbr.1999.21.1.31

Grolle, R., and M. L. So. 2003. *Riccia fruticulosa* O.F.Müll., 1782 and blue *Metzgeria* (Marchantiophyta) in Europe. *Botanical Journal of the Linnean Society* 142(2): 229–235. https://doi.org/10.1046/j.1095-8339.2003.00176.x

Grolle, R., and R.-L. Zhu. 2002. On *Macrocolura* and the subdivision of *Colura* (Lejeuneaceae, Hepaticae). *Journal of the Hattori Botanical Laboratory* 92: 181–190. https://doi.org/10.18968/jhbl.92.0_181

Grolle, R., R.-L. Zhu, and S. R. Gradstein. 2001. On *Cyrtolejeunea* A. Evans (Lejeuneaceae, Hepaticae). *Taxon* 50(4): 1067–1074. https://doi.org/10.2307/1224721

Groth, H., and J. Heinrichs. 2003. Reinstatement of *Chiastocaulon* Carl (Plagiotheciaceae), based on evidence from nuclear ribosomal ITS and chloroplast gene rps4 sequences. *Pl. Biol. (Stuttgart)* 5: 615–622. http://doi.org/10.1055/s-2003-44716

Groth, H., and J. Heinrichs. 2005. Maximum likelihood analyses of chloroplast gene rbcL sequences indicate relationships of *Syzygiella* (Jungermanniopsida) with Lophoziaceae rather than Plagiochilaceae. *Cryptogamie, Bryologie* 26(1): 49–57. https://sciencepress.mnhn.fr/en/periodiques/bryologie/26/1/maximum-likelihood- analyses-chloroplast-gene-rbcl-sequences-indicate-relationships-syzygiella-jungermanniopsida-lophoziaceae-rather-plagiochilaceae

Groth, H., G. Helms, and J. Heinrichs. 2002. The systematic status of *Plagiochila* sects. *Bidentes* Carl and *Caducilobae* Inoue (Hepaticae) inferred from nrDNA ITS sequences. *Taxon* 51(4): 675–684. https://doi.org/10.2307/1555022

Groth, H., M. Lindner, R. Wilson, F. A. Hartmann, M. Schmull, S. R. Gradstein, and J. Heinrichs. 2003. Biogeography of *Plagiochila* (Hepaticae): Natural species groups span over floristic kingdoms. *Journal of Biogeography* 30(7): 965–978. https://doi.org/10.1046/j.1365-2699.2003.00916.x

Groth, H., M. Lindner, and J. Heinrichs. 2004a. Phylogeny and biogeography of *Plagiochila* (Plagiochilaceae) based on nuclear and chloroplast DNA sequences. *Monographs in Systematic Botany from the Missouri Botanical Garden* 98: 365–387.

Groth, H., F. A. Hartmann, R. Wilson, and J. Heinrichs. 2004b. NrITS sequences and morphology indicate a synonymy of the Patagonian *Plagiochila rufescens* Steph. And the Central American *Plagiochila bicuspidata* Gottsche. *Cryptogamie, Bryologie* 25(1): 19–28. https://sciencepress.mnhn.fr/en/periodiques/bryologie/25/1/nrits-sequences-and-morphology-indicate-synonymy-patagonian-plagiochila-rufescens-steph-and-central-american-plagiochila-bicuspidata-gottsche

Groth-Malonek, M., J. Heinrichs, H. Schneider, and S. R. Gradstein. 2004. Phylogenetic relationships in the Lejeuneaceae (Hepaticae) inferred using ITS sequences of nuclear ribosomal DNA. *Organisms, Diversity and Evolution* 4(1/2): 51–57. https://doi.org/10.1016/j.ode.2003.11.001

Guadalupe, Y., N. Flores, and J. C. Villarreal. 2021. Descripción morfométrica de dos poblaciones de *Leiosporoceros dussii* (Stephani) Hässel (Leiosporocerotaceae) de Panamá [Morphometric description of two populations of *Leiosporoceros dussii* (Stephani) Hässel (Leiosporocerotaceae) in Panama]. *Tecnociencia* 23(1): 61–81. https://doi.org/10.48204/j.tecno.v23n1a4

Guerke, W. R. 1978. A monograph of the genus *Jubula* Dumortier. *Bryophytorum Bibliotheca* 17: 1–118.

Guerra, G., C. Arrocha, G. Rodríguez, J. Déleg, and Á. Benítez. 2020. Briófitos en los troncos de árboles como indicadores de la alteración en bosques montanos de Panamá [Bryophytes on tree trunks as indicators of montane forest disturbance in Panama]. *Revista de Biología Tropical* 68(2): 492–502. https://www.scielo.sa.cr/pdf/rbt/v68n2/0034-7744-rbt-68-02-492.pdf

Guerra-Batista, N., C. Arrocha, E. Rodríguez-Quiel, and Á. Benítez. 2020. Diversidad y distribución de briófitos epífilos en *Beilschmiedia costaricensis* (Mez & Pittier) C.K.Allen (Lauraceae) [Diversity and distribution of epiphyllous bryophytes in *Beilschmiedia costaricensis* (Mez & Pittier) C.K.Allen (Lauraceae)]. *Colombia Forestal* 23(2): 47–58. https://doi.org/10.14483/2256201X.15177

Haarbrink, J. 1981. Studies on Colombian cryptogams. XI. High Andean species of *Frullania* subg. *Chonanthelia* (Hepaticae). *Lindbergia* 7(1): 47–57. https://www.jstor.org/stable/20149389

Haber, W. A. 2000. Plants and vegetation. In *Monteverde: Ecology and conservation of a tropical cloud forest*, ed. N. M. Nadkarni and N. T. Wheelwright, pp. 39–94. Oxford University Press, New York. https://doi.org/10.1093/oso/9780195095609.003.0009

Hallingbäck, T., and N. Hodgetts. 2000. *Mosses, liverworts, and hornworts. Status survey and conservation action plan for bryophytes*. International Union for Conservation of Nature, Gland, 106 pp.

Hampe, E. 1847. Berichte über die Hepaticae, welche Hr. Moritz in Columbien sammelte und dem königlichen Herbarium in Schönberg überlieferte, nach Synopsis Hepaticarum und den Moritzschen Nummern aufgefürt. *Linnaea* 20: 321–336. https://www.biodiversitylibrary.org/item/109744#page/329/mode/1up

Hampe, E. 1851a. Hepaticae Oerstedianae (continuatio et finis). *Linnaea* 24(6): 640–641. https://www.biodiversitylibrary.org/item/109424#page/648/mode/1up

Hampe, E. 1851b. Hepaticae Oerstedianae. *Linnaea* 24(3): 300–304. https://www.biodiversitylibrary.org/item/10868#page/303/mode/1up

Hampe, E., and C. M. Gottsche. 1852. Expositio hepaticarum Portoricensium, quas collegit Schwanecke, hortulanus. *Linnaea* 25(3): 337–358. https://www.biodiversitylibrary.org/item/10868#page/303/mode/1up

Hartmann, F. A., R. Wilson, S. R. Gradstein, H. Schneider, and J. Heinrichs. 2006. Testing hypothesis on species delimitations and disjunctions in the liverwort *Bryopteris* (Jungermanniopsida: Lejeuneaceae). *International Journal of Plant Sciences* 167(6): 1205–1214. https://doi.org/10.1086/508023

Hasegawa, J. 1984. Distribution of Japanese species of Anthocerotae. *Journal of the Hattori Botanical Laboratory* 56: 21–28. https://doi.org/10.18968/jhbl.56.0_21

Hasegawa, J. 1994. New classification of Anthocerotae. *Journal of the Hattori Botanical Laboratory* 76: 21–34. https://doi.org/10.18968/jhbl.76.0_21

Hasegawa, J. 2001. A new species of *Phaeoceros* with remarkable spore features from southeast Asia. *Bryological Research* 7(12): 373–377. https://doi.org/10.24474/bryologicalresearch.7.12_373

Hasegawa, J., and B. C. Tan. 1986. *Notothylas breutelii*, a Caribbean species newly found in the Philippines. *Journal of Bryology* 14: 249–253.

Hässel, G. G. 1957. *Monoclea forsteri* in Argentina. *Boletín de la Sociedad Argentina de Botánica* 6: 248–250. https://botanicaargentina.org.ar/monoclea-forsteri-en-argentina/

Hässel, G. G. 1961. Las especies argentinas del género *Symphyogyna*. *Boletín de la Sociedad Argentina de Botánica* 9: 233–260. https://botanicaargentina.org.ar/las-especies-argentinas-del-genero-symphogyna/

Hässel, G. G. 1962. Estudio de las Anthocerotales y Marchantiales de la Argentina. *Opera Lilloana* 7: 1–298. http://www.lillo.org.ar/editorial/index.php/publicaciones/catalog/book/363

Hässel, G. G. 1976. Taxonomic problems and progress in the study of the Hepaticae. *Journal of the Hattori Botanical Laboratory* 41: 19–36.

Hässel, G. G. 1986. *Leiosporoceros* Hässel n. gen. and Leiosporocerotaceae Hässel n. fam. Of the Anthocerotopsida. *Journal of Bryology* 14(2): 255–259. https://doi.org/10.1179/jbr.1986.14.2.255

Hässel, G. G. 1989. Las especies de *Phaeoceros* (Anthocerotophyta) de América del Norte, Sud y Central; la ornamentación de sus esporas y taxonomía [The North, South and Central American species of *Phaeoceros* (Anthocerotophyta); their spore ornamentation and taxonomy]. *Candollea* 44(2): 715–739. https://www.e-periodica.ch/digbib/view?pid=can-002%3A1989%3A44%3A%3A426#728

Hässel, G. G. 1990. Las especies de *Anthoceros* y *Folioceros* (Anthocerotophyta) de América del Norte, Sud y Central: la ornamentación de sus esporas y taxonomía [The North, South and Central American species of *Anthoceros* and *Folioceros* (Anthocerotophyta); their spore ornamentation and taxonomy]. *Candollea* 45(1): 201–220. https://www.e-periodica.ch/digbib/view?pid=can-002%3A1990%3A45%3A%3A4#206

Hässel, G. G. 1996. Reduction of *Clasmatocolea* Spruce and *Xenocephalozia* Schust. To the synonymy of *Chiloscyphus* Corda. Some rehabilitations and new combinations in *Chiloscyphus*. *Nova Hedwigia* 63(3/4): 493–516.

Hässel, G. G., and M. F. Rubies. 2009. Catalogue of Marchantiophyta and Anthocerotophyta of southern South America. *Nova Hedwigia Beiheft* 134: 1–672.

Hässel, G. G., and S. S. Solari. 1975. Bryophyta Hepaticopsida: Calobryales, Jungermanniales: Vetaformaceae, Balantiopsidaceae. In *Flora Criptogámica de Tierra del Fuego*, 15, Fasc. 1, ed. S. A. Guarrera, I. Gamundi de Amos, and D. Rabinovich de Halperin, pp. 7–181. Fundación para la Educación, la Ciencia y la Cultura, Buenos Aires.

Hässel, G. G., and S. S. Solari. 1985. Catálogo de las hepáticas. In *Transecta Botánica de la Patagonia Austral*, ed. O. Boelcke, D. M. Moore, and F. A. Roig, pp. 299–342. CONICET, Buenos Aires.

Hatcher, R. E. 1957. The genus *Trichocolea* in North, Central and South America – (Hepaticae). *Lloydia* 20(3): 139–185.

Hatcher, R. E. 1960. A monograph of the genus *Isotachis*. *Nova Hedwigia* 2(4): 573–608.

Hattori, S. 1948. Hepaticarum species novae vel minus cognitae nipponenses. VI. *Journal of the Hattori Botanical Laboratory* 3: 37–52. https://doi.org/10.18968/jhbl.3.0_37

Hattori, S. 1952. Hepaticae of Shikoku and Kyushu, southern Japan (2). *Journal of the Hattori Botanical Laboratory* 8: 21–46. https://doi.org/10.18968/jhbl.8.0_21

Hattori, S. 1966. Anthocerotae and Hepaticae. In *The flora of Eastern Himalaya. Results of the botanical expedition to eastern Himalaya organized by the University of Tokyo 1960 and 1963*, ed. H. Hara, pp. 501–536. University of Tokyo Press, Tokyo.

Hattori, S. 1968a. Hepaticae collected by F. Schmid in Ceylon and Pakistan. *Candollea* 23(2): 287–294. https://www.e-periodica.ch/digbib/view?pid=can-002%3A1968%3A23%3A%3A200#312

Hattori, S. 1968b. Résultats des expéditions scientifiques genevoises au Népal en 1952 et 1954 (partie botanique) 20. Hepaticae. *Candollea* 23: 275–285. https://www.e-periodica.ch/digbib/view?pid=can-002%3A1968%3A23%3A%3A200#300

Hattori, S. 1973. Two South American *Frullanias*, *F. mirabilis* and *F. pendulostyla*. *Journal of Japanese Botany* 48(4): 104–110. http://www.jjbotany.com/pdf/JJB_048_104_110.pdf

Hattori, S. 1980. A revision of the subgenus *Homotropantha* of the genus *Frullania*, Hepaticae. *Journal of the Hattori Botanical Laboratory* 47: 165–236.

Hattori, S., and M. Mizutani. 1969. Studies in the flora of Thailand. 59. Hepaticae. *Dansk Bot. Ark.* 27(1): 91–98.

Haupt, A. W. 1942. Notes on some Hepaticae of Costa Rica. *Bryologist* 45(5): 138–146. https://doi.org/10.2307/3239087

Haynes, C. C. 1933. Bryophyta. Hepaticae. In *The flora of Barro Colorado Is., Panama*, ed. P. C. Standley, pp. 22–23. Contributions of the Arnold Arboretum, Harvard University, Cambridge, Mass.

Haynes, C. C., M. A. Howe, and E. W. Evans. 1923. Sphaerocarpales-Marchantiales. *North American Flora* 14: 1–66. https://www.biodiversitylibrary.org/item/15423#page/1/mode/1up

He, X.-L. 1996. Type studies on *Pycnolejeunea* (Lejeuneaceae, Hepaticae). II. *Annales Botanici Fennici* 33(1): 51–58. http://www.sekj.org/PDF/anbf33/anbf33-051.pdf

He, X.-L. 1997. Type studies on *Pycnolejeunea* (Lejeuneaceae, Hepaticae), IV. *Annales Botanici Fennici* 34(1): 65–74. http://www.sekj.org/PDF/anbf34/anbf34-065p.pdf

He, X.-L. 1999. A taxonomic monograph of the genus *Pycnolejeunea* (Lejeuneaceae, Hepaticae). *Acta Botanica Fennica* 163: 1–77.

He, X.-L., and R. Grolle. 2001. *Xylolejeunea*, a new genus of the Lejeuneaceae (Hepaticae) from the Neotropics, Madagascar and the Seychelles. *Annales Botanici Fennici* 38(1): 25–44. http://www.sekj.org/PDF/anbf38/anbf38-025p.pdf

He, X.-L. and Y. Sun. 2017. Rare sporophyte found in Europe for *Herbertus sendtneri* with a range expansion to Africa and Malesia. *Phytotaxa* 324(1): 42–50. https://doi.org/10.11646/phytotaxa.324.1.2

He, X.-L., K. S. He, and J. Hyvönen. 2016. Will bryophytes survive in a warming world? *Perspectives in Plant Ecology, Evolution and Systematics* 19: 49–60. https://doi.org/10.1016/j.ppees.2016.02.005

Hedwig. J. 1784. *Theoria generationis et fructificationis*. Petropoli [St. Petersburg]: Typis Academiae imper. Scientarum, 164 pp.

Heinrichs, J. 2002. A taxonomic revision of *Plagiochila* sect. *Hylacoetes*, sect. *Adiantoidea* and sect. *Fuscoluteae* in the Neotropics with a preliminary subdivision of neotropical Plagiochilaceae into nine lineages. *Bryophytorum Bibliotheca* 58: 1–184.

Heinrichs, J., and H. Anton. 2001. Bryophyta Exsiccata Generis Plagiochilae, a new exsiccata distributed by the University of Göttingen Herbarium. *Polish Botanical Journal* 46: 109–111.

Heinrichs, J., and S. R. Gradstein. 2000. A revision of *Plagiochila* sect. *Crispatae* and sect. *Hypnoides* (Hepaticae) in the Neotropics. I. *Plagiochila disticha, P. montagnei* and *P. raddiana*. *Nova Hedwigia* 70(1/2): 161–184. https://doi.org/10.1127/nova.hedwigia/70/2000/161

Heinrichs, J., and C. Renker. 2001. New synonyms in *Plagiochila* (Hepaticae). *Cryptogamie, Bryologie* 22(4): 247–250. https://doi.org/10.1016/S1290-0796(01)01072-0

Heinrichs, J., R. Grolle, and U. Drehwald. 1998a. The conspecificity of *Plagiochila killarniensis* Pearson and *P. bifaria* (Sw.) Lindenb. (Hepaticae). *Journal of Bryology* 20(2): 495–497. https://doi.org/10.1179/jbr.1998.20.2.495

Heinrichs, J., S. R. Gradstein, and R. Grolle. 1998b. A revision of the neotropical species of *Plagiochila* (Dumort.) Dumort. (Hepaticae) described by Olof Swartz. *Journal of the Hattori Botanical Laboratory* 85: 1–32. https://doi.org/10.18968/jhbl.85.0_1

Heinrichs, J., C. Renker, and S. R. Gradstein. 1999. A taxonomic revision of *Plagiochila subplana* Lindenb., a widespread liverwort of tropical America. *Haussknechtia, Beiheft* 9: 171–181.

Heinrichs, J., H. Anton, I. Holz, I., and S. R. Gradstein. 2000a. On the blue color in *Plagiochila longispina* Lindenb. & Gottsche (Plagiochilaceae). *Cryptogamie, Bryologie* 21(2): 109–111. https://doi.org/10.1016/S1290-0796(00)00111-5

Heinrichs, J., H. Anton, S. R. Gradstein, R. Mues, and I. Holz. 2000b. Surface wax, a new taxonomic feature in Plagiochilaceae. *Plant Systematics and Evolution* 225(1/4): 225–233. https://doi.org/10.1007/BF00985469

Heinrichs, J., H. Anton, S. R. Gradstein, and R. Mues. 2000c. Systematics of *Plagiochila* sect. *Glaucescentes* Carl (Hepaticae) from tropical America: A morphological and chemotaxonomical approach. *Plant Systematics and Evolution* 220(1/2): 115–138. https://doi.org/10.1007/BF00985374

Heinrichs, J., I. Holz, and S. R. Gradstein. 2001a. The sporophyte of *Steereochila* (Plagiochilaceae). *Journal of Bryology* 23(1): 35–41. https://doi.org/10.1179/jbr.2001.23.1.35

Heinrichs, J., H. Anton, I. Holz, and R. Grolle. 2001b. The andine *Plagiochila tabinensis* Steph. And the identity of *Acrobolbus laceratus* R.M.Schust. (Hepaticae). *Nova Hedwigia* 73(3/4): 445–452. https://doi.org/10.1127/nova.hedwigia/73/2001/445

Heinrichs, J., H. Groth, S. R. Gradstein, D. S. Rycroft, W. J. Cole, and H. Anton. 2001c. *Plagiochila rutilans* (Hepaticae): A poorly known species from tropical America. *Bryologist* 104(3): 350–361. https://doi.org/10.1639/0007-2745(2001)104%5b0350:PRHAPK%5d2.0.CO;2

Heinrichs, J., T. Pröschold, C. Renker, H. Groth, and D. S. Rycroft. 2002a. *Plagiochila virginica* A.Evans rather than *P. dubia* Lindenb. & Gottsche occurs in Macaronesia; placement in sect. *Contigua* Carl is supported by ITS sequences of nuclear ribosomal DNA. *Pl. Syst. Evol.* 230(3/4): 221–230. https://doi.org/10.1007/s006060200006

Heinrichs, J., H. Groth, I. Holz, D. S. Rycroft, C. Renker, and T. Pröschold. 2002b. The systematic position of *Plagiochila moritziana*, *P. trichostoma*, and *P. deflexa* based on ITS sequence variation of nuclear ribosomal DNA, morphology, and lipophilic secondary metabolites. *Bryologist* 105(2): 189–203. https://doi.org/10.1639/0007-2745(2002)105%5b0189:TSPOPM%5d2.0.CO;2

Heinrichs, J., D. S. Rycroft, H. Groth, and W. J. Cole. 2002c. Morphological and phytochemical studies of *Plagiochila papillifolia* Steph., a neotropical liverwort new to Europe. *Journal of Bryology* 24(2): 119–126. https://doi.org/10.1179/037366802125000971

Heinrichs, J., S. R. Gradstein, H. Groth, and M. Lindner. 2003a. *Plagiochila cucullifolia* var. *anomala* var. nov. from Ecuador, with notes on discordant molecular and morphological variation in *Plagiochila*. *Plant Systematics and Evolution* 242(1/4): 205–216. https://doi.org/10.1007/s00606-003-0063-5

Heinrichs, J., R. Wilson, R., and H. Groth. 2003b. A new locality of *Plagiochila dimorpha* var. *ecuadorica* (Plagiochilaceae, Hepaticae). *Cryptogamie, Bryologie* 24: 155–158.

Heinrichs, J., H. Groth, M. Lindner, K. Feldberg, and D. Rycroft. 2004a. Molecular, morphological, and phytochemical evidence for a broad species concept of *Plagiochila bifaria* (Hepaticae). *Bryologist* 107(1): 28–40. https://doi.org/10.1639/0007-2745(2004)107%5b28:MMAPEF%5d2.0.CO;2

Heinrichs, J., H. Groth, M. Lindner, C. Renker, T. Pócs, and T. Pröschold. 2004b. Intercontinental distribution of *Plagiochila corrugata* (Plagiochilaceae, Hepaticae) inferred from nrDNA ITS sequences and morphology. *Botanical Journal of the Linnean Society* 146(4): 469–481. https://doi.org/10.1111/j.1095-8339.2004.00340.x

Heinrichs, J., M. Lindner, and H. Groth. 2004c. Sectional classification of the North American *Plagiochila* (Hepaticae, Plagiochilaceae). *Bryologist* 107(4): 489–496. https://doi.org/10.1639/0007-2745(2004)107%5b489:SCOTNA%5d2.0.CO;2

Heinrichs, J., M. Lindner, and T. Pócs. 2004d. nrDNA internal transcribed spacer data reveal that *Rhodoplagiochila* R. M. Schust. (Marchantiophyta: Jungermanniales) is a member of *Plagiochila* sect. *Arrectae* Carl. *Organisms, Diversity and Evolution* 4(1/2): 109–118. https://doi.org/10.1016/j.ode.2004.01.001

Heinrichs, J., M. Lindner, S. R. Gradstein, H. Groth, V. Buchbender, A. Solga, and E. Fischer. 2005a. Origin and subdivision of *Plagiochila* (Jungermanniidae: Plagiochilaceae) in tropical Africa based on evidence from nuclear and chloroplast DNA sequences and morphology. *Taxon* 54(2): 317–333. https://doi.org/10.2307/25065360

Heinrichs, J., M. Lindner, H. Groth, and C. Renker. 2005b. Distribution and synonymy of *Plagiochila punctata* (Taylor) Taylor, with hypotheses on the evolutionary history of *Plagiochila* sect. *Arrectae* (Plagiochilaceae, Hepaticae). *Plant Systematics and Evolution* 250(1/2): 105–117. https://doi.org/10.1007/s00606-004-0220-5

Heinrichs, J., D. S. Rycroft, K. Feldberg, M. Lindner, and F. A. Hartman. 2006a. The systematic position of *Plagiochila surinamensis* inferred from nrDNA ITS sequences, morphology and phytochemistry. *Journal of the Hattori Botanical Laboratory* 100: 135–142. https://doi.org/10.18968/jhbl.100.0_135

Heinrichs, J., M. Lindner, H. Groth, J. Hentschel, K. Feldberg, C. Renker, J. J. Engel, M. J. von Konrat, D. G. Long, and H. Schneider. 2006b. Goodbye or welcome Gondwana? – insights into the phylogenetic biogeography of the leafy liverwort *Plagiochila* with a description of *Proskauera*, gen. nov. (Plagiochilaceae, Jungermanniales). *Plant Systematics and Evolution* 258(3/4): 227–250. https://doi.org/10.1007/s00606-006-0411-3

Heinrichs, J., J. Hentschel, R. Wilson, K. Feldberg, and H. Schneider. 2007. Evolution of leafy liverworts (Jungermanniidae, Marchantiophyta): Estimating divergence times from chloroplast DNA sequences using penalized likelihood with integrated fossil evidence. *Taxon* 56(1): 31–44. https://doi.org/10.2307/25065733

Heinrichs, J., F. Klugmann, J. Hentschel, and H. Schneider. 2009. DNA taxonomy, cryptic speciation and diversification of the Neotropical-African liverwort, *Marchesinia brachiata* (Lejeuneaceae, Porellales). *Molecular Phylogenetics and Evolution* 53(1): 113–121. https://doi.org/10.1016/j.ympev.2009.05.032

Heinrichs, J., K. Feldberg, H.-P. Krieier, and J. Váňa. 2010. DNA-based identification of *Herbertus* species on Gough Island, South Atlantic Ocean. *Cryptogamie, Bryologie* 31(1): 67–74. https://sciencepress.mnhn.fr/en/periodiques/bryologie/31/1/dna-based-identification- herbertus-species-gough-island-south-atlantic-ocean

Heinrichs, J., S. Dong, Y. Yu, A. Schäfer-Verwimp, T. Pócs, K. Feldberg, J. Hentschel, A. R. Schmidt, and H. Schneider. 2012a. A 150 year-old mystery solved: Transfer of the rheophytic endemic liverwort *Myriocolea irrorata* to *Colura*. *Phytotaxa* 66: 55–64. https://doi.org/10.11646/PHYTOTAXA.66.1.9

Heinrichs, J., A. Bombosch, K. Feldberg, H.-P. Kreier, J. Hentschel, J. Eckstein, D. G. Long, R.-L. Zhu, A. Schäfer- Verwimp, A. R. Schmidt, B. Shaw, A. J. Shaw,

and J. Váňa. 2012b. A phylogeny of the northern temperate leafy liverwort genus *Scapania* (Scapaniaceae, Jungermanniales). *Molecular Phylogenetics and Evolution* 62(3): 973–985. https://doi.org/10.1016/j.ympev.2011.11.029

Heinrichs, J., S. Dong, K. Feldberg, A. Schäfer-Verwimp, and A. R. Schmidt. 2012c. *Sphaerolejeunea* (Lejeuneaceae, Porellales) is a synonym of *Lejeunea*. *Phytotaxa* 69: 7–15. https://doi.org/10.11646/PHYTOTAXA.69.1.3

Heinrichs, J., S. Dong, A. Schäfer-Verwimp, T. Pócs, K. Feldberg, A. Czumaj, A. R. Schmidt, J. Reitner, M. A. M. Renner, J. Hentschel, M. Stech, and H. Schneider. 2013. Molecular phylogeny of the leafy liverwort *Lejeunea* (Porellales): Evidence for a Neotropical origin, uneven distribution of sexual systems and insufficient taxonomy. *PloS ONE* 8(12): e82547. https://doi.org/10.1371/journal.pone.0082547

Heinrichs, J., A. Schäfer-Verwimp, A. Czumay, S. Dong, A. Scheben, K. Feldberg, and H. Schneider. 2014a. Towards a monophyletic classification of Lejeuneaceae I: Subtribe Leptolejeuneinae subtr. Nov. *Phytotaxa* 156(3): 165–174. https://doi.org/10.11646/phytotaxa.165.3.7

Heinrichs, J., S. Dong, A. Schäfer-Verwimp, D. F. Peralta, K. Feldberg, A. R. Schmidt, and H. Schneider. 2014b. Towards a monophyletic classification of Lejeuneaceae II: Subtribes Pycnolejeuneinae and Xylolejeuneinae subtr. Nov., transfer of *Otolejeunea* to Lepidolejeuninae, and generic refinements. *Phytotaxa* 163(2): 61–76. https://doi.org/10.11646/phytotaxa.163.2.1

Heinrichs, J., A. Czumaj, S. Dong, A. Scheben, A. Schäfer-Verwimp, D. F. Peralta, K. Feldberg, A. R. Schmidt, and H. Schneider. 2014c. The Bromeliaceae tank dweller *Bromeliophila* (Lejeuneaceae, Porellales) is a member of the *Cyclolejeunea-Prionolejeunea* clade. *Plant Systematics and Evolution* 300(1): 63–73. https://doi.org/10.1007/s00606-013-0860-4

Heinrichs, J., K. Feldberg, J. Bechteler, A. Scheben, A. Czumaj, T. Pócs, H. Schneider, and A. Schäfer-Verwimp. 2015. Integrative taxonomy of *Lepidolejeunea* (Jungermanniopsida: Porellales): Ocelli allow the recognition of two neglected species. *Taxon* 64(2): 216–228. https://doi.org/10.12705/642.5

Heinrichs, J., A. Hagborg, and L. Söderström. 2018. Carl—the accidental nomenclaturalist. *Bryophyte Diversity Evol.* 40(2): 118–120. https://doi.org/10.11646/bde.40.2.10

Hell, K. G. 1969. Briófitas talosas dos arredores da cidade de São Paulo (Brasil). *Boletim de Faculdade de Filosofia, Ciências e Letras, Universidade de São Paulo, botánica* 25: 1–190. https://doi.org/10.11606/issn.2318-5988.v25i1p7-187

Hentschel, J., R. Wilson, M. Burghardt, H.-J. Zündorf, H. Schneider, and J. Heinrichs. 2006a. Reinstatement of Lophocoleaceae (Jungermanniopsida) based on chloroplast gene rbcL data: Exploring the importance of female involucres for the systematics of Jungermanniales. *Plant Systematics and Evolution* 258(2): 211–226. https://doi.org/10.1007/s00606-006-0408-y

Hentschel, J., H.-J. Zündorf, F. H. Hellwig, A. Schäfer-Verwimp, J. Heinrichs. 2006b. Taxonomic studies in *Chiloscyphus* Corda (Jungermanniales: Lophocoleaceae) based on nrITS sequences and morphology. *Plant Systematics and Evolution* 262(1/2): 125–137. https://doi.org/10.1007/s00606-006-0463-4

Hentschel, J., R.-L. Zhu, D. G. Long, P. G. Davison, H. Schneider, S. R. Gradstein, and J. Heinrichs. 2007a. A phylogeny of *Porella* (Porellaceae, Jungermanniopsida) based on nuclear and chloroplast DNA sequences. *Molecular Phylogenetics and Evolution* 45(2): 693–705. https://doi.org/10.1016/j.ympev.2007.05.005

Hentschel, J., K. Feldberg, H.-J. Zündorf, F. H. Hellwig, H. Schneider, and J. Heinrichs. 2007b. The systematic position of *Pachyglossa* and *Clasmatocolea* (Jungermanniopsida: Lophocoleaceae) inferred from nrDNA ITS sequences and morphology. *Taxon* 56(4): 1136–1142. https://doi.org/10.2307/25065908

Hentschel, J., J. A. Paton, H. Schneider, and J. Heinrichs. 2007c. Acceptance of *Liochlaena* Nees and *Solenostoma* Mitt., the systematic position of *Eremonotus* Pearson and notes on *Jungermannia* L. s. l. (Jungermanniidae) based on chloroplast DNA sequence data. *Plant Systematics and Evolution* 268(1/4): 147–157. https://doi.org/10.1007/s00606-007-0549-7

Hentschel, J., M. J. von Konrat, T. Pócs, A. Schäfer-Verwimp, A. J. Shaw, H. Schneider, and J. Heinrichs. 2009. Molecular insights into the phylogeny and subgeneric classification of *Frullania* Raddi (Frullaniaceae,. *Molecular Phylogenetics and Evolution* 52(1): 142–156. https://doi.org/10.1016/j.ympev.2008.12.021

Hentschel, J., M. J. von Konrat, L. Söderström, A. Hagborg, J. Larraín, P. Sukkharak, J. Uribe, and L. Zhang. 2015. Notes on Early Land Plants Today. 72. Infrageneric classification and new combinations, new names, new synonyms in *Frullania*. *Phytotaxa* 220(2): 127–142. https://doi.org/10.11646/phytotaxa.220.2.3

He-Nygrén, X. L., I. Ahonen, A. Juslén, D. Glenny, and S. Piippo. 2004. Phylogeny of liverworts – beyond a leaf and a thallus. *Monographs in Systematic Botany from the Missouri Botanic Garden* 98: 88–118.

He-Nygrén, X. L., A. Juslén, I. Ahonen, D. Glenny, and S. Piippo. 2006. Illuminating the evolutionary history of liverworts (Marchantiophyta) - towards a natural classification. *Cladistics* 22(1): 1–31. https://doi.org/10.1111/j.1096-0031.2006.00089.x

Herrera, F. L. 1921. *Contribución a la flora del departamento del Cuzco, primera parte, segunda edición*. Universidad del Cuzco, Cusco, 241 pp.

Herrera, F. L. 1926. Chloris Cuzcoensis. *Anales de la Universidad del Cuzco* 1: 1–222.

Herrera, F. L. 1930. *Estudios sobre la flora del departamento del Cuzco, tomo I.* San Marti y Cia, Lima, 152 pp. https://plants.jstor.org/stable/10.5555/al.ap.visual.nymlc04260

Herrera, F. L. 1941. *Sinopsis de la Flora del Cuzco. Tomo 1. Parte sistemática.* Gobierno, Lima, 528 pp.

Herzog, T. 1920. Die Bryophyten meiner zweiten Reise durch Bolivia (Nachtrag). *Bibliotheca Botanica* 88: 1–31. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=4616

Herzog, T. 1925a. Contribuições ao conhecimento da flora briologica do Brasil [Beiträge zur Kenntnis der Moosflora von Brasilien]. *Archivos de Botanica do Estado de São Paulo* 1(2): 27–105.

Herzog, T. 1925b. Neue Bryophyten aus Brasilien. *Repertorium Specierum Novarum Regni Vegetabilis* 21(1/7): 22–33. https://doi.org/10.1002/fedr.19250210104

Herzog, T. 1927. Zwei Bryophytensammlungen aus Südamerika. *Hedwigia* 67(6): 249–268.

Herzog, T. 1928. *Scapania portoricensis* Hpe et G. *Annales Bryologici* 1: 91–112. https://bibdigital.rjb.csic.es/idurl/1/16490

Herzog, T. 1930. *Mnioloma* Herzog nov. gen. hepaticarum. *Annales Bryologici* 3: 115–120. https://bibdigital.rjb.csic.es/idurl/1/16490

Herzog, T. 1931. Die Moose der Ph. V. Lützelburgschen Reisen durch Nordbrasilien. *Hedwigia* 71(6): 332–350. https://www.zobodat.at/pdf/Hedwigia_71_1931_0332-0350.pdf

Herzog, T. 1932. Beiträge zur Kenntnis der Gattung *Plagiochila* 1. Neotropische Arten. *Hedwigia* 72(6): 195–242. https://www.zobodat.at/pdf/Hedwigia_72_1932_0195-0242.pdf

Herzog, T. 1934. Die Bryophyten der Andenreisen von C. Troll (Bolivia, Colombia, Panamá). *Hedwigia* 74(2): 79–114. https://www.zobodat.at/pdf/Hedwigia_74_1934_0079-0114.pdf

Herzog, T. 1938. Hepaticae standleyanae costaricenses et hondurenses. *Revue Bryologie Lichénologique* 11(1/2): 5–30. https://www.biodiversitylibrary.org/item/281515#page/5/mode/1up

Herzog, T. 1939. Zur Bryophytenflora Südchiles. I. Verzeichnis der gesammelten Bryophyten. *Beihefte zum Botanischen Centralblatt. Abt. 2, Systematik, Pflanzengeographie, angewandte Botanik* 60B(1/2): 1–35. https://bibdigital.rjb.csic.es/idurl/1/14986

Herzog, T. 1942a. Drei neue *Ceratolejeunea*-Arten aus der Neotropis. *Revue Bryologie Lichénologique* 13(1): 20–24. https://www.biodiversitylibrary.org/item/281544#page/22/mode/1up

Herzog, T. 1942b. Beiträge zur Kenntnis neotropischer Bryophyten. *Beihefte zum Botanischen Centralblatt. Abt. 2, Systematik, Pflanzengeographie, angewandte Botanik* 61B(3): 559–590.

Herzog, T. 1948. Studien über kritische und neue Lejeuneaceae der Indomalaya. *Svensk Botanisk Tidskrift* 42(3): 230–241.

Herzog, T. 1950a. Miscellanea bryologica. I. Neotropica. *Memoranda Societatis pro Fauna et Flora Fennica* 25: 43–72.

Herzog, T. 1950b. Hepaticae borneenses (Oxford University expeditions to Sarawak, 1932). *Transactions of the British Bryological Society* 1(4): 275–326. https://doi.org/10.1179/006813850804878680

Herzog, T. 1951. Hepaticae standleyanae costaricenses et hondurenses. Pars II. *Revue Bryologie Lichénologique* 20(1/2): 126–175. https://www.biodiversitylibrary.org/item/281545#page/136/mode/1up

Herzog, T. 1952. Hepaticae ecuadorienses a Cl. D:re Gunnar Harling annis 1946–1947 lectae. *Svensk Botanisk Tidskrift* 46(1): 62–108.

Herzog, T. 1953. Eine neue Lebermossgattung, *Pseudomarsupidium* Herz. N. gen. aus Westpatagonien. *Svensk Botanisk Tidskrift* 47(1): 34–42.

Herzog, T. 1955a. Hepaticae aus Columbia und Peru. *Feddes Repertorium Specierum Novarum Regni Vegetabilis* 57(1/2): 156–203.

Herzog, T. 1955b. Revision neotropischer *Plagiochila* Arten I. *Revue Bryologie Lichénologique* 24(3/4): 193–201. https://www.biodiversitylibrary.org/item/281529#page/207/mode/1up

Herzog, T. 1957a. Eine neue *Acrobolbus*-Art aus Westaustralien. *Revue Bryologie Lichénologique* 26(1/2): 60–61. https://www.biodiversitylibrary.org/item/312318#page/64/mode/1up

Herzog, T. 1957b. Lebermoose aus Ecuador gesammelt von Dr. E. Asplund. *Svensk Botanisk Tidskrift* 51(1): 187–196.

Holdridge, L. R. 1967. *Life Zone Ecology*. Tropical Science Center. San José, 206 pp. https://reddcr.go.cr/sites/default/files/centro-de-documentacion/holdridge_1966_-_life_zone_ecology.pdf

Holz, I. 2003. *Diversity and ecology of bryophytes and macrolichens in primary and secondary montane* Quercus *forests, Cordillera de Talamanca, Costa Rica*. Georg-August Universität, Göttingen, 172 pp. http://webdoc.sub.gwdg.de/diss/2004/holz/holz.ppp

Holz, I. 2006. Epiphytic communities of bryophytes and macrolichens in a Costa Rican montane oak forest (in M. Kappelle, *Ecology and conservation of neotropical montane oak forests*). *Ecol. Stud. Analysis Synth*. 185: 83–98. https://doi.org/10.1007/3-540-28909-7_7

Holz, I., and S. R. Gradstein. 2005a. Cryptogamic epiphytes in primary and recovering upper montane oak forests of Costa Rica—species richness, community composition and ecology. *Plant Ecology* 178: 89–109. https://doi.org/10.1007/s11258-004-2496-5

Holz, I., and S. R. Gradstein. 2005b. Phytogeography of the bryophyte floras of oak forests and páramo of the Cordillera de Talamanca, Costa Rica. *Journal of Biogeography* 32(9): 1591–1609. https://doi.org/10.1111/j.1365-2699.2005.01250.x

Holz, I., J. Heinrichs, A. Schäfer-Verwimp, and S. R. Gradstein. 2001. Additions to the hepatic flora of Costa Rica III. *Cryptogamie, Bryologie* 22(4): 255–273. https://doi.org/10.1016/S1290-0796(01)01074-4

Holz, I., S. R. Gradstein, J. Heinrichs, and M. Kappelle. 2002. Bryophyte diversity, microhabitat differentiation, and distribution of life forms in Costa Rican upper montane *Quercus* forest. *Bryologist* 105(3): 334–348. https://doi.org/10.1639/0007-2745(2002)105%5b0334:BDMDAD%5d2.0.CO;2

Hong, W. S. 1988. Studies on *Scapania portoricensis* Hampe et Gott. Of Latin America. *Lindbergia* 14(1): 69–72. https://www.jstor.org/stable/20149657

Hooker, J. D. 1867. *Handbook of the New Zealand flora, part II*. Reeve & Co., London, pp. 393–798. https://doi.org/10.5962/bhl.title.132966

Hooker, J. D., and T. Taylor. 1844a. Hepaticae Antarcticae. I. Species of Lord Auckland's and Campbell's. *London J. Bot.* 3: 366–400. https://www.biodiversitylibrary.org/item/6314#page/370/mode/1up

Hooker, J. D., and T. Taylor. 1844b. Hepaticae Novae-Zelandiae et Tasmaniae. IV. Species Tasmaniae. *London J. Bot.* 3: 577–582. https://www.biodiversitylibrary.org/item/6314#page/560/mode/1up

Hooker, J. D., and T. Taylor. 1844c. Hepaticae Antarcticae. II. Species of the Falkland Islands, Cape Horn, and of Kerguelen's Land. *London J. Bot.* 3: 454–481. https://www.biodiversitylibrary.org/item/6314#page/458/mode/1up

Hooker, W. J. 1813. *British* Jungermanniae, *part. 9–15*. Longmans, London, pp. 33–60. https://doi.org/10.5962/bhl.title.118506

Hooker, W. J. 1814. *British* Jungermanniae, *part. 16–17*. Longmans, London, pp. 61–68. https://doi.org/10.5962/bhl.title.118506

Hooker, W. J. 1815. *British* Jungermanniae, *part. 18–19*. Longmans, London, pp. 69–76. https://doi.org/10.5962/bhl.title.118506

Hooker, W. J. 1816a. *Plantae cryptogamicae*. J. Harding, London, 4 pp. https://onb.digital/result/109BF00E

Hooker, W. J. 1816b. *British* Jungermanniae, *part. 20–22*. Longmans, London, pp. 77–84. https://doi.org/10.5962/bhl.title.118506

Hooker, W. J. 1820. *Musci exotici*. Volume II. Longmans, London, 176 pp. https://doi.org/10.5962/bhl.title.10721

Hooker, W. J. 1830. *Botanical miscellany*. Volume I. John Murray, London, 236 pp. https://doi.org/10.5962/bhl.title.112345

Hooker, W. J., and W. Wilson. 1844. Enumeration of the mosses and Hepaticae. *London J. Bot.* 3: 149–167. https://www.biodiversitylibrary.org/item/6314#page/153/mode/1up

Horikawa, Y. 1934. Monographia hepaticarum australi-japonicarum. *Journal of Science of the Hiroshima University, Series B, Division 2 (Botany)* 2: 101–325.

Horikawa, Y. 1943. Notulae hepaticologicae. *Acta Phytotaxonomica et Geobotanica* 13: 212–214. https://doi.org/10.18942/bunruichiri.KJ00002992568

Horwich, R. H., and J. Lyon. 1990. *A Belizean rain forest. The community baboon sanctuary*. Orang-utan Press. Gays Mills, WI, USA, 420 pp.

Howe, M. A. 1898. New American Hepaticae. *Bulletin of the Torrey Botanical Club* 25(4): 183–192. https://doi.org/10.2307/2477701

Howe, M. A. 1902. Notes on North American Hepaticae. *Bulletin of the Torrey Botanical Club* 29(5): 281–289. https://doi.org/10.2307/2478722

Howe, M. A. 1934. The Hepaticae (chiefly *Riccia* and Anthocerotaceae) of the Galapagos Islands and the coast and islands of Central America and Mexico. *Proceedings of the California Academy of Sciences*, ser. 4, 21(17): 199–209. https://www.biodiversitylibrary.org/item/54208#page/213/mode/1up

Hrdina, A., and D. Romportl. 2017. Evaluating global biodiversity hotspots – very rich and even more endangered. *Journal of Landscape Ecology* 10(1): 108–115. https://doi.org/10.1515/jlecol-2017-0013

Hübener, J. W. P. 1834. *Hepaticologia Germanica*. Schwan und Götz'sche Hofbuchhandlung, Mannheim, 314 pp. http://books.google.de/books?id=tPcUAAAAYAAJ&printsec=frontcover&dq=Hepaticologia+Germanica

Husnot, T. 1875. Catalogue des muscinées récoltées aux Antilles françaises - 1. Hépatiques. *Revue Bryologie* 2: 1–5. https://www.biodiversitylibrary.org/item/10012#page/65/mode/1up

Ibarra-Morales, A., M. E. Muñíz, and S. Valencia. 2015. The genus *Anthoceros* (Anthocerotaceae, Anthocerotophyta) in central Mexico. *Phytotaxa* 205(4): 215–228. https://doi.org/10.11646/phytotaxa.205.4.1

Ibarra-Morales, A., S. Valencia, and M. E. Muñiz. 2020. Anatomy and morphology of *Phaeomegaceros fimbriatus* (Gottsche) R.J.Duff, J.C.Villarreal, Cargill & Renzaglia (Anthocerotophyta), a novel record for North America. *Cryptogamie, Bryologie* 41(17): 219–228. https://doi.org/10.5252/cryptogamie-bryologie2020v41a17

Ilkiu-Borges, A. L. 2000. *Lejeuneaceae (Hepaticae) da Estação Científica Ferreira Penna, Caxiuanã, Município de Melgaço, Pará*. Universidade Federal Rural da Amazônia (Faculdade de Ciencias Agrárias do Pará), Belém, 251 pp.

Ilkiu-Borges, A. L. 2005. A taxonomic revision of *Echinocolea* (Lejeuneaceae, Hepaticae). *Nova Hedwigia* 80(1/2): 45–71. https://doi.org/10.1127/0029-5035/2005/0080-0045

Ilkiu-Borges, A. L. 2006. *A taxonomic monograph of the genus* Prionolejeunea *(Lejeuneaceae, Jungermanniopsida)*. Cuvillier Verlag, Göttingen, 191 pp.

Ilkiu-Borges, A. L. 2016. *Prionolejeunea* (Lejeuneaceae, Jungermanniopsida). *Flora Neotropica Monograph* 116: 1–127. https://www.jstor.org/stable/26312815

Ilkiu-Borges, A. L., and R. C. L. Lisbôa. 2002a. *Leptolejeunea* e *Rhaphidolejeunea* (Lejeuneaceae) na Estação Científica Ferreira Penna, Pará. *Acta Amazonica* 32(2): 205–215. https://doi.org/10.1590/1809-43922002322215

Ilkiu-Borges, A. L., and R. C. L. Lisbôa. 2002b. Os gêneros *Cyrtolejeunea* Evans e *Drepanolejeunea* Steph. (Lejeuneaceae) na estação científica Ferreira Penna (PA) e novas ocorrências. *Boletim do Museu Paraense "Emílio Goeldi," Sér. Botánica*, n.s., 18(2): 231–245. https://www.biodiversitylibrary.org/item/226209#page/31/mode/1up

Ilkiu-Borges, A. L., G. Dauphin, and N. Salazar Allen. 2018. *Prionolejeunea clementinae*, a new species of Lejeuneaceae (Marchantiophyta) from Panama. *Nova Hedwigia* 106(1/2): 65–71. https://doi.org/10.1127/nova_hedwigia/2018/0457

Infante, M., and P. Heras. 2002. Notes on Venezuelan Ricciaceae (Marchantiophyta). *Tropical Bryology* 21: 93–95. https://doi.org/10.11646/BDE.21.1.14

Inoue, H. 1966. A monograph of the hepatic genus *Syzygiella* Spruce. *Journal of the Hattori Botanical Laboratory* 29: 171–213.

Inoue, H. 1968. Taxonomic miscellany on the genera *Plagiochila* and *Syzygiella*. *Bulletin of the National Science Museum, Tokyo*, n.s., 11(3): 299–307.

Inoue, H. 1974. Two new species of *Syzygiella* Spruce from Colombia, South America. *Bulletin of the National Science Museum, Tokyo*, n.s., 17(4): 301–305.

Inoue, H. 1975. *Bryophyta selecta exsiccata*. Fasc. VI (nos. 251–300). Natural Science and Museum, Tokyo, 6 pp.

Inoue, H. 1987. *Steereochila*, a new genus of the Plagiochilaceae from the neotropics. *Memoirs of the New York Botanical Garden* 45: 279–282.

Inoue, H. 1988. Notes on the Plagiochilaceae, XV. The gneus [sic] *Steereochila* Inoue and *Plagiochila eggersii*, sp. nov. *Bulletin of the National Science Museum, Tokyo, Series B, Botany* 14(4): 135–141.

Inoue, H. 1989a. Two new species of *Plagiochila* (Dum.) Dum. From Panama, Central America. *Bulletin of the National Science Museum, Tokyo, Series B, Botany* 15(3): 91–96.

Inoue, H. 1989b. Notes on Plagiochilaceae XVI. Studies on some *Plagiochila* species in the neotropics. *Bulletin of the National Science Museum, Tokyo, Series B, Botany* 15: 33–48.

Ireland, R. R., and L. M. Ley. 1984. Type specimens of bryophytes in the national museum of natural sciences, national museums of Canada. *Syllogeus* 47: 1–69. https://www.biodiversitylibrary.org/item/111546#page/3/mode/1up

Iverson, G. B. 1963. Karyotype evolution in the leafy liverwort genus *Frullania*. *Journal of the Hattori Botanical Laboratory* 26: 119–170.

Jack, J. B. 1881. Die Europäischen *Radula*-Arten (Schluss). *Flora* 64(25): 385–400. https://www.biodiversitylibrary.org/item/980#page/355/mode/1up

Jack, J. B. 1894. *Stephaniella paraphyllina* Jack nov. gen. Hepaticarum. *Hedwigia* 33(1): 11–14. https://www.biodiversitylibrary.org/item/13876#page/48/mode/1up

Jack, J. B., and F. Stephani. 1892. Hepaticae Wallisianae. *Hedwigia* 31(1): 11–27. https://www.biodiversitylibrary.org/item/13874#page/38/mode/1up

Jamy, M., M. A. M. Renner, S. D. F. Patzak, M. M. Heslewood, A. Schäfer-Verwimp, and J. Heinrichs. 2016. Reinstatement of *Plagiochila* sect. *Abietinae* (Plagiochilaceae, Jungermanniopsida). *Cryptogamie, Bryologie* 37(4): 351–360. https://doi.org/10.7872/cryb/v37.iss4.2016.351

Jones, E. W. 1976. African hepatics. XXIX. Some little-known species and extensions of range. *Journal of Bryology* 9(1): 43–54. https://doi.org/10.1179/jbr.1976.9.1.43

Jongmans, A. G., N. van Breemen, S. R. Gradstein, and F. van Oort. 2001. How liverworts build hanging gardens from volcanic ash in Costa Rica. *Catena* 44(1): 13–22. https://doi.org/10.1016/S0341-8162(00)00151-X

Jovet-Ast, S. 1947. Hépatiques des Antilles françaises récoltées par P. et V. Allorge en 1936. I. *Revue Bryologie Lichénologique* 16(1/2): 17–46. https://www.biodiversitylibrary.org/item/281516#page/26/mode/1up

Jovet-Ast, S. 1948. Hépatiques des Antilles françaises récoltées par P. et V. Allorge en 1936 II. *Revue Bryologie Lichénologique* 17(1/4): 24–34. https://www.biodiversitylibrary.org/item/281500#page/28/mode/1up

Jovet-Ast, S. 1951. Répartition géographique de *Ceratolejeunea maritima* (Spr.) St. *Revue Bryologie Lichénologique* 20(1/2): 219–220. https://www.biodiversitylibrary.org/item/281545#page/229/mode/1up

Jovet-Ast, S. 1953. Le genre *Colura*, Hépatiques, Lejeunéacées, Diplasiae. *Revue Bryologie Lichénologique* 22(3/4): 206–312. https://www.biodiversitylibrary.org/item/281539#page/218/mode/1up

Jovet-Ast, S. 1954. Le genre *Colura*, Hépatiques, Lejeunéacées, Diplasiae (supplément). *Revue Bryologie Lichénologique* 23(1/2): 1–22. https://www.biodiversitylibrary.org/item/281543#page/9/mode/1up

Jovet-Ast, S. 1956. *Diplasiolejeunea galloana*, espèce nouvelle d'Amérique tropicale. *Revue Bryologie Lichénologique* 25(3/4): 277–279. https://www.biodiversitylibrary.org/item/281522#page/294/mode/1up

Jovet-Ast, S. 1957. Hépatiques du Surinam. *Acta Botanica Neerlandica* 6(5): 602–608. https://doi.org/10.1111/j.1438-8677.1957.tb00599.x

Jovet-Ast, S. 1959. Les Hépatiques des Antilles: Distribution géographique. *Compte Rendu Sommaire des Séances de la Société de Biogéographie* 36: 122–134.

Jovet-Ast, S. 1960. Muscinées du Mexique récoltées par Roger Heim en 1956 et 1959. *Revue Bryologie Lichénologique* 29(1/2): 30–43. https://www.biodiversitylibrary.org/item/281503#page/34/mode/1up

Jovet-Ast, S. 1965. *Plagiochasma intermedium* Ldbg. et G. en Ethiopie. *Revue Bryologie Lichénologique* 33(3/4): 610–612. https://www.biodiversitylibrary.org/item/281552#page/652/mode/1up

Jovet-Ast, S. 1976. Compléments à la connaissance des *Colura*: espèces et localités nouvelles. *Revue Bryologie Lichénologique* 42(4): 909–922. https://www.biodiversitylibrary.org/item/281602#page/389/mode/1up

Jovet-Ast, S. 1981. *Riccia* d'Amérique tropicale. *Occasional Papers of the Farlow Herbarium of Cryptogamic Botany* 16: 111–115. https://www.biodiversitylibrary.org/item/31907#page/116/mode/1up

Jovet-Ast, S. 1987. Une *Riccia* nouveau du Nord-est du Brésil: *Riccia vitalii* (Ricciaceae, sous-genre *Riccia*). *Memoirs of the New York Botanical Garden* 45: 283–288.

Jovet-Ast, S. 1991. *Riccia* (Hépatiques, Marchantiales) d'Amérique latine. Taxons du sous-genre *Riccia*. *Cryptogamie, Bryologie, Lichénologie* 12(3): 189–370. https://www.biodiversitylibrary.org/item/291549#page/5/mode/1up

Jovet-Ast, S. 1993. *Riccia* L. (Hépatiques, Marchantiales) d'Amérique latine. Taxons des sous-genres *Thallocarpus*, *Leptoriccia*, *Ricciella*. *Cryptogamie, Bryologie, Lichénologie* 14(3): 219–301. https://www.biodiversitylibrary.org/item/291556#page/5/mode/1up

Jovet-Ast, S., and P. Tixier. 1962. Hépatiques du Viet-Nam – II. *Revue Bryologie Lichénologique* 31(1/2): 23–33. https://www.biodiversitylibrary.org/item/281511#page/29/mode/1up

Juárez-Martínez, C., and C. Delgadillo. 2017. A taxonomic revision of the family Stephaniellaceae (Marchantiophyta). *Cryptogamie, Bryologie* 38(1): 91–112. https://doi.org/10.7872/cryb/v38.iss1.2017.91

Juslén, A. 2006. Phylogeny of Vetaformaceae, Lepicoleaceae and Herbertaceae (including Mastigophoraceae) inferred from chloroplast trnL-F, nuclear ITS2, and morphology. *Annales Botanici Fennici* 43(5): 349–362. http://www.sekj.org/PDF/anbf43/anbf43-349.pdf

Kachroo, P. 1957. *Schusteria*, a new genus of Lejeuneaceae. *Bryologist* 60(3): 273–277. https://doi.org/10.2307/3240366

Kachroo, P. 1970. Hepaticae of India – A taxonomic survey and census. II. Takakiaceae through Marsupellaceae. *Kashmir Journal of Science* 7: 176–200.

Kachroo, P., and R. M. Schuster. 1961. The genus *Pycnolejeunea* and its affinities to *Cheilolejeunea*, *Euosmolejeunea*, *Nipponolejeunea*, *Tuyamaella*, *Siphonolejeunea* and *Strepsilejeunea*. *Journal of the Linnean Society, Botany.* 56(368): 475–511. https://doi.org/10.1111/j.1095-8339.1961.tb02542.x

Kamimura, M. 1961. A monograph of Japanese Frullaniaceae. *Journal of the Hattori Botanical Laboratory* 24: 1–109.

Kamimura, M. 1974. A small collection of liverworts from Java and Borneo I. *Bulletin of Kochi Gakuen Junior College* 5: 65–83. https://doi.org/10.24649/kgc.5.0_65

Kappelle, M. 1996. *Los bosques de roble (*Quercus*) de la Cordillera de Talamanca, Costa Rica. Biodiversidad, ecologia, conservación y desarrollo.* Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, 319 pp. https://www.researchgate.net/publication/254791610_Los_Bosques_de_Roble_Quercus_de_la_Cordillera_de_Talamanca_Costa_Rica_Biodiversidad_Ecologia_Conservacion_y_Desarrollo

Kappelle, M., P. A. Kennis, and R. A. de Vries. 1995. Changes in diversity along a successional gradient in a Costa Rican upper montane *Quercus* forest. *Biodiversity and Conservation* 4(1): 10–34. https://doi.org/10.1007/BF00115312

Karczmarz, K. 1983. New additions to bryoflora of Santa Ines Is. And Seno Iceberg territory. *Miscellanea Bryologica et Lichenologica* 9(7): 143–146. https://doi.org/10.18968/mbl.9.7_143

Kashyap, S. R., and N. L. Dutt. 1925. The genus *Notothylas* in India. *Proceedings of the Lahore Philosophical Society* 4: 49–56.

Katagiri, T. 2013. A tropical American species, *Trichocolea filicaulis*, new to Papua New Guinea. *Hikobia* 16(3): 293–298.

Katagiri, T. 2015. On the identity of *Trichocolea argentea* Herzog, with a new combination in the genus *Leiomitra* Lindb. *Journal of Bryology* 37(4): 304–307. https://doi.org/10.1179/1743282015Y.0000000021

Katagiri, T. 2019. Taxonomic studies on type material of the family Trichocoleaceae from Central and South America with two new combinations of the genus *Leiomitra*. *Hattoria* 10: 39–52. https://doi.org/10.18968/hattoria.10.0_39

Khanna, L. P. 1944. On two new species of *Megaceros* with notes on *M. arachnoideus, M. denticulatus, M. giganteus*, and *M. grandis*. *Farlowia* 1(4): 515–523.

Kis, G. 2004. Non European bryophyta types and list of exsiccata in the Eger Cryptogamic Herbarium (EGR). *Folia Historico-Naturalia Musei Matraensis* 28: 5–52. https://matramuzeum.nhmus.hu/sites/default/files/nhmusfiles/kiadvanyok/folia/vol28/005-052.pdf

Kitagawa, N. 1965. Cephaloziellaceae of Japan. *Acta Phytotaxonomica et Geobotanica* 21(3/4): 107–116. https://doi.org/10.18942/bunruichiri.KJ00001077949

Konstantinova, N. A. 2004. *Iwatsukia jishibae* (Steph.) N. Kitag. (Cephaloziaceae, Hepaticae) in Russia. *Arctoa* 13: 203–209. https://doi.org/10.15298/arctoa.13.16

Konstantinova, N. A., and A. N. Vasiljev. 1994. On the hepatic flora of Sayan Mountains (south Siberia). *Arctoa* 3: 123–132. https://doi.org/10.15298/arctoa.03.07

Konstantinova, N. A., and A. A. Vilnet. 2011. *Jubula hutchinsiae* subsp. *caucasica* subsp. nov. (Jubulaceae, Marchantiophyta) – a new taxon from the western Caucasus. *Arctoa* 20: 227–238. https://doi.org/10.15298/arctoa.20.18

Krauss, F. 1846. Pflanzen des Cap- und Natal-Landes. Div. II. Plantae. *Flora* 29(9): 129–138. https://www.biodiversitylibrary.org/item/943#page/130/mode/1up

Kruijt, R. C. 1985. A preliminary revision of the genus *Dicranolejeunea* (Spruce) Schiffn. *Beih. Nova Hedwigia* 80: 155–163.

Kruijt, R. C. 1988. A monograph of the genera *Dicranolejeunea* and *Acanthocoleus*. *Bryophytorum Bibliotheca* 36: 1–135.

Kruijt, R. C., and S. R. Gradstein. 1985. A new genus of Lejeuneaceae from Tropical America: *Lindigianthus* gen. nov. *Beiheft zur Nova Hedwigia* 80: 165–172.

Kruijt, R. C., and S. R. Gradstein. 1986. Studies on Lejeuneaceae subfam. Ptychanthoideae X. On *Brachiolejeunea phyllorhiza* (Nees) Kruijt & Gradstein comb. Nov. (Hepaticae). *Nova Hedwigia* 43(3/4): 299–309.

Kunth, C. S. 1822. *Synopsis plantarum. Tomus primus.* F. G. Levrault, Paris, 491 pp. https://doi.org/10.5962/bhl.title.638

Kuntze, O. 1891. *Revisio Generum plantarum: vascularium omnium atque cellularium multarum secundum leges nomenclaturae internationales cum enumeratione plantarum exoticarum in itinere mundi collectarum. Pars I.* Arthur Felix, Leipzig, Germany, pp. 1–374. https://doi.org/10.5962/bhl.title.327

Kürschner, H. 2003. Nineteen new records to the bryophyte flora of Socotra Island. Additions to the bryophyte flora of the Arabian Peninsula and Socotra 5. *Willdenowia* 33(2): 445–458. https://www.jstor.org/stable/3997444

Kuwahara, Y. 1969. Taxonomic accounts of "the hair-falcate" species of the hepatic genus *Metzgeria*. *Nova Hedwigia* 17: 359–368.

Kuwahara, Y. 1973. Further notes on the production of vegetative thallus structures by female involucres of *Metzgeria*, and a new species of *Metzgeria*. *Bryologist* 76(4): 566–571. https://doi.org/10.2307/3241426

Kuwahara, Y. 1976. Studies of genus *Metzgeria* of Colombia collected by Mme. Hélène Bischler, 1956–1959. *Journal of the Hattori Botanical Laboratory* 40: 259–290.

Kuwahara, Y. 1978a. Elaterophores observed in two new species of *Metzgeria* from Peru and considerations of the elaterophore in the Hepaticae. *Bryologist* 81(3): 404–410. https://doi.org/10.2307/3241426

Kuwahara, Y. 1978b. A recent collection of New Guinean *Metzgeria*. *Lindbergia* 4(3/4): 289–295. https://www.jstor.org/stable/20149300

Kuwahara, Y. 1980. *Metzgeria maegdefraui*, spec. nova from the neotropics. *Hikobia* 8(3/4): 269–273.

Kuwahara, Y. 1981. Studies of Peruvian collections of the genus *Metzgeria* made by P. & E. Hegewald in 1973 and 1977. *Nova Hedwigia* 34: 769–815.

Kuwahara, Y. 1982. Studies on Colombian cryptogams. XV. On high Andean *Metzgeria* collected by Dr. Antoine M. Cleef in 1972 and 1973. *Proceedings, Koninklijke Nederlandse Akademie van Wetenschappen, Series C, Biological and Medical Sciences* 85(3): 357–380.

Kuwahara, Y. 1983. *Metzgeria decipiens* (Mass.) Schiffn. (Hepaticae), with a wide geographical distribution. *Nova Hedwigia* 38: 603–616.

Kuwahará, Y. 1984. Synopsis of section *Biseria* subg. *Metzgeria* Kuw. Genus *Metzgeria* Raddi (Hepaticae). *Hikobia* 9: 31–42.

Kuwahara, Y. 1986. The Metzgeriaceae of the neotropics. *Bryophytorum Bibliotheca* 28: 1–254.

Labillardière, J. J. H. 1806. *Novae Hollandiae plantarum specimen, tomus secundus*. Dominae Huzard, Paris, 130 pp. https://doi.org/10.5962/bhl.title.62462

Lapshina, E. D., and E. Y. Muldiyarov. 1998. The bryophyte flora of the middle western Siberia. *Arctoa* 7: 25–32. https://doi.org/10.15298/arctoa.07.04

Larraín, J., B. Carter, B. Shaw, J. Hentschel, L. S. Strozier, T. Furuki, J. Heinrichs, B. J. Crandall-Stotler, J. J. Engel, and M. J. von Konrat. 2015. The resurrection of *Neohattoria* Kamim. (Jubulaceae, Marchantiophyta): A six decade systematic conflict resolved through a molecular perspective. *PhytoKeys* 50: 101–122. https://doi.org/10.3897/phytokeys.50.4940

Lavocat Bernard, E. 2018. Contribution to the knowledge of the bryophyte flora of Martinique, Lesser Antilles. *Cryptogamie, Bryologie* 39(3): 343–360. https://doi.org/10.7872/cryb/v39.iss3.2018.343

Lavocat Bernard, E., and C. Reeb. 2016. Additions to the bryophyte flora of Guadeloupe archipelago (Lesser Antilles). *Bryophyte Diversity and Evolution* 38(2): 47–52. https://doi.org/10.11646/bde.38.2.3

Lavocat Bernard, E., C. Reeb, and J. F. Bernard. 2009. Étude sur l'état de la flore des bryophytes des Antilles Françaises. *Association pour l'Etude et la protection des Vertébrés et végétaux des petites Antilles, rapport* 33: 1–28.

Lee, G. E., J. Bechteler, T. Pócs, A. Schäfer-Verwimp, A., and J. Heinrichs. 2016. Molecular and morphological evidence for an intercontinental range of the liverwort *Lejeunea pulchriflora* (Marchantiophyta: Lejeuneaceae). *Organisms, Diversity and Evolution* 16(1): 13–21. https://doi.org/10.1007/s13127-015-0243-5

Lee, G. E., J. Bechteler, and J. Heinrichs. 2018. A revision of unrevised taxon names in the former genus *Taxilejeunea* (Marchantiophyta: Lejeuneaceae) from Asia. *Phytotaxa* 358(1): 26–48. https://doi.org/10.11646/phytotaxa.358.1.2

Lee, G. E., J. Bechteler, T. Pócs, and A. Schäfer-Verwimp. 2019. Molecular and morphological evidence for a new species of liverwort, *Lejeunea heinrichsii* (Marchantiophyta: Lejeuneaceae) from Taveuni, Fiji. *Journal of Systematics and Evolution* 57(4): 361–370. https://doi.org/10.1111/jse.12470

Lehmann, J. G. C. 1829. Hepaticarum capensium a C.F. Ecklon. *Linnaea* 4(3): 357–371. https://www.biodiversitylibrary.org/item/10848#page/410/mode/1up

Lehmann, J. G. C. 1832. *Novarum et minus cognitarum stirpium pugillus quartus*. Meissner, Hamburg, 64 pp. https://doi.org/10.5962/bhl.title.45011

Lehmann, J. G. C. 1833. *Novarum et minus cognitarum stirpium pugillus quintus*. Meissner, Hamburg, 28 pp. https://doi.org/10.5962/bhl.title.45011

Lehmann, J. G. C. 1834. *Novarum et minus cognitarum stirpium pugillus sextus*. Meissner, Hamburg, 72 pp. https://doi.org/10.5962/bhl.title.45011

Lehmann, J. G. C. 1838. *Novarum et minus cognitarum stirpium pugillus septimus*. Meissner, Hamburg, 41 pp. https://doi.org/10.5962/bhl.title.45011

Lehmann, J. G. C. 1844. *Novarum et minus cognitarum stirpium pugillus octavus*. Meissner, Hamburg, 56 pp. https://doi.org/10.5962/bhl.title.45011

Lehmann, J. G. C. 1857. *Novarum et minus cognitarum stirpium pugillus decimus*. Meissner, Hamburg, 34 pp. https://doi.org/10.5962/bhl.title.45011

Lemos-Michel, E. 1983. *Frullania* (Jungermanniales, Hepaticopsida) no Rio Grande do Sul, Brasil. I. Subgênero *Diastaloba* [*Frullania* (Jungermanniales, Hepaticopsida) in Rio Grande do Sul, Brasil. I. Subgenus *Diastaloba*]. *Revista Brasileira de Botânica* 6: 115–123.

Lemos-Michel, E., and R. M. Bueno. 1992. O gênero *Bazzania* S. F. Gray (Hepaticae) no Rio Grande do Sul, Brasil [The genus *Bazzania* S. F. Gray (Hepaticae) in Rio Grande do Sul, Brazil]. *Hoehnea* 19: 143–149.

Lemos-Michel, E., and O. Yano. 1998. O gênero *Bryopteris* (Hepatophyta) no Brasil [The genus Bryopteris (Hepatophyta) in Brazil]. *Acta Botanica Brasilica* 12(1): 5–24. https://doi.org/10.1590/S0102-33061998000100002

León, Y., T. Pócs, and R. R. Rico. 1998. Registros para la brioflora de Los Andes Venezolanos, I. *Cryptogamie, Bryologie, Lichénologie* 19(1): 1–25. https://www.biodiversitylibrary.org/item/291585#page/5/mode/1up

León-Yánez, S., S. R. Gradstein, and C. Wegner. 2006. *Hepáticas (Marchantiophyta) y Antoceros (Anthocerotophyta) del Ecuador.* Publicaciones del Herbario QCA, Pontificia Universidad Católica del Ecuador, Quito, 101 pp.

Li, J., L. Zhang, and L. Zhou. 2011. Phylogenetic position of the genus *Hattorioceros* (Anthoceratophyta). *Taxon* 60(6): 1633–1636. https://doi.org/10.1002/tax.606008

Libert, M.-A. 1820. Sur un genre nouveau d'hépatiques, *Lejeunia*. *Annales générales des sciences physiques* 6: 372–374. http://hdl.handle.net/2027/chi.104913971

Ligrone, R., J. Duckett, and K. S. Renzaglia. 2012. Major transitions in the evolution of early land plants: A bryological perspective. *Annals of Botany (Oxford)*, n.s., 109(5): 851–871. https://doi.org/10.1093/aob/mcs017

Linares, E. L., and J. Uribe. 2002. *Libro rojo de briófitas de Colombia*. Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, 170 pp.

Lindberg, S. O. 1866. *Sauteria seriata* Lindb. *Hedwigia* 5(3): 33–34. https://www.biodiversitylibrary.org/item/13856#page/54/mode/1up

Lindberg, S. O. 1868. En liten profbit på namnförbistring. *Notiser ur Sällskapets pro Fauna et Flora Fennica Förhandlingar* 9: 3–18. https://www.biodiversitylibrary.org/item/47772#page/4/mode/1up

Lindberg, S. O. 1872. Contributio ad floram cryptogamam Asiae boreali-orientalis. *Acta Societatis Scientiarum Fennicae* 10: 221–280. https://www.biodiversitylibrary.org/item/52073#page/241/mode/1up

Lindberg, S. O. 1873. Sällskapet pro Fauna et Flora Fennicas sammanträde den 6 december. *Helsingfors Dagblad* 1873(353, 28 Dec): 2.

Lindberg, S. O. 1875. Hepaticae in Hibernia mense Julii 1873 lectae. *Acta Societatis Scientiarum Fennicae* 10: 465–559. https://www.biodiversitylibrary.org/item/52073#page/489/mode/1up

Lindberg, S. O. 1877. Monographia *Metzgeriae*. *Acta Societatis pro Fauna et Flora Fennica* 1(2): 1–49. https://www.biodiversitylibrary.org/item/28252#page/219/mode/1up

Lindberg, S. O. 1886. Sur la morphologie des mousses (suite). *Revue Bryologie* 13(6): 100–109. https://www.biodiversitylibrary.org/item/10017#page/103/mode/1up

Lindberg, S. O., and H. W. Arnell. 1889. Musci asiae borealis. Erster Theil: Lebermoose. *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, n.s., 23(5): 1–69. https://www.biodiversitylibrary.org/item/106745#page/487/mode/1up

Lindberg, S. O., and E. F. Lackström. 1874. *Hepaticae Scandinavicae exsiccata quarum specimina*. Fasc. 1. Helsinki, pp. 1–25. https://bryophyteportal.org/portal/collections/exsiccati/index.php?ometid=522&specimenonly=1&imagesonly=0&collid=0&sortBy=0

Lindenberg, J. B. C. 1829. *Synopsis hepaticarum europaearum*. Eduard Weberum, Bonnae, pp. 1–133.

Lindenberg, J. B. C. 1839. *Species hepathicarum*. Fasc. 1. Henry & Cohen, Bonn, pp. 1–36. https://mdz-nbn-resolving.de/details:bsb10229809

Lindenberg, J. B. C. 1840. *Species hepaticarum*. Fasc. 2–4. Henry & Cohen, Bonn, pp. 37–120. https://reader.digitale-sammlungen.de/de/fs1/object/display/bsb10229809_00037.html

Lindenberg, J. B. C. 1843. *Species hepaticarum*. Fasc. 5. Henry & Cohen, Bonn, pp. 121–164. https://mdz-nbn-resolving.de/details:bsb10229812

Lindenberg, J. B. W. 1844. Novarum et minus cognitarum stirpium pugillus octavus quem indici scholarum etc. praemisit J. G. Ch. Lehmann. *Flora* 27: 494.

Lindenberg, J. B. C., and C. M. Gottsche. 1851. Plantae Kegelianae. *Linnaea* 24(6): 625–639. https://www.biodiversitylibrary.org/item/109424#page/633/mode/1up

Lindner, M., T. Pócs, and J. Heinrichs. 2004. On the occurrence of *Plagiochila stricta* on Madagascar, new to Africa. *Journal of the Hattori Botanical Laboratory* 96: 261–271. https://doi.org/10.18968/jhbl.96.0_261

Linnaeus, C. 1753. *Species plantarum, ed. 1*. Laurentii Salvii, Holmiae [Stockholm], 1200 pp. https://doi.org/10.5962/bhl.title.669

Linnaeus, C. 1759. *Systema naturae. Tomus II. Editio decima, reformata*. Laurentii Salvii, Holmiae [Stockholm], pp. 825–1384. https://doi.org/10.5962/bhl.title.36932

Loeske, L. 1903. *Moosflora des Harzes*. Bornträger, Leipzig, Germany, 350 pp. https://publikationsserver.tu-braunschweig.de/servlets/MCRFileNodeServlet/dbbs_derivate_00021544/Aa-2724.pdf

Loitlesberger, K. 1894. Hepaticae. In *Diagnoses plantarum novarum a cl. d. Const. Jelski in Peruvia lectarum, pars prima*, ed. I. Szyszylowicz, pp. 18–25. Sumptibus Academiae, Cracoviae.

Long, D. G. 1979. Hepaticae of Bhutan, East Himalaya. *Lindbergia* 5(1): 54–62. https://www.jstor.org/stable/20149324

Long, D. G. 2005. Studies on the genus *Asterella* (Aytoniaceae) VI. Infrageneric classification in *Asterella*. *Journal of the Hattori Botanical Laboratory* 97: 249–261. https://doi.org/10.18968/jhbl.97.0_249

Long, D. G., and R. Grolle. 1990. Hepaticae of Bhutan II. *Journal of the Hattori Botanical Laboratory* 68: 381–440. https://doi.org/10.18968/jhbl.68.0_381

Long, D. G., M. Möller, and J. Preston. 2000. Phylogenetic relationships of *Asterella* (Aytoniaceae, Marchantiopsida) inferred from chloroplast DNA sequences. *Bryologist* 103(4): 625–644. https://doi.org/10.1639/0007-2745(2000)103%5b0625:PROAAM%5d2.0.CO;2

Longton, R. E. 1992. The role of bryophytes and lichens in terrestrial ecosystems. In *Bryophytes and lichens in a changing environment*, ed. J. W. Bates and A. M. Farmer, pp. 32–76. Oxford University Press, Oxford, U.K.

Lücking, A. 1995. *Diversität und Mikrohabitatpräferenzen epiphyller Moose in einem tropischen Regenwald in Costa Rica unter besonderer Berücksichtigung der Lejeuneaceae.* Universität Ulm, Ulm, 211 pp.

Lücking, A. 1997. Diversity and distribution of epiphyllous bryophytes in tropical rainforests in Costa Rica. *Abstracta Botanica (Budapest)* 21(1): 79–87. https://www.jstor.org/stable/43519207

Lücking, R., J. Mata-Lorenzen, and G. Dauphin. 2010. Epizoic liverworts, lichens and fungi growing on Costa Rican Shield Mantis (Mantodea: *Choeradodis*). *Studies on Neotropical Fauna and Environment* 45(3): 175–186. https://doi.org/10.1080/01650521.2010.532387

Lüth, M., and A. Schäfer-Verwimp. 2004. Additions to the bryophyte flora of the Neotropics. *Tropical Bryology* 25: 7–17. https://doi.org/10.11646/BDE.25.1.3

Mackay, J. T. 1836. *Flora hibernica. Part second, comprising the musci, Hepaticae and lichenes.* William Curry Jun and Co., Dublin, 279 pp. https://doi.org/10.5962/bhl.title.6699

Macoun, J. 1902. *Catalogue of Canadian plants, Lichenes and Hepaticae.* Government printing bureau, Ottawa, Ontario, 180 pp. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=3026

Mahú, M. 1981. Las Briófitas del Bosque Las Petras, Quintero, Provincia de Valparaíso, Chile. *Bryologist* 84(4): 548–555. https://doi.org/10.2307/3242566

Malombe, I. 2009. Studies on African *Cheilolejeunea* (Lejeuneaceae) I: New species and new combinations. *Acta Botanica Hungarica* 51(3/4): 315–328. https://doi.org/10.1556/ABot.51.2009.3-4.8

Malzer, O., and M. Fiebig. 2008. Outline of the geology of the Golfo Dulce region (Costa Rica) and its surroundings in Central America. *Stapfia* 80: 23–30. https://www.zobodat.at/pdf/STAPFIA_0088_0023-0030.pdf

Mandl, N. A. 2007. *Bryophyte and macrolichen diversity of the* Purdiaea nutans *forest in southern Ecuador and its relationship to soil, climate, and vegetation structure.* Mathematisch Naturwissenschaftliche Fakultäten der Georg-August Universität, Göttingen, 105 pp.

Mandl, N. A., M. Lehnert, S. R. Gradstein, M. Kessler, M. Abiy, and M. Richter. 2008. The unique *Purdiaea nutans* forest of southern Ecuador: Abiotic characteristics and cryptogamic diversity (in E. Beck, J. Bendix, I. Kottke, F. Makeschin, and R. Mosandl, *Gradients in a tropical mountain ecosystem of Ecuador*). *Ecological Studies: Analysis and Synthesis* 198: 275–280. https://doi.org/10.1007/978-3-540-73526-7_26

Marino, P. C., and N. Salazar Allen. 1992. Tropical epiphyllous hepatic communities growing on two species of shrub in Barro Colorado Island, Panama: The influence of light and microsite. *Lindbergia* 17(4/6): 91–95. https://www.jstor.org/stable/20149814

Markham, J., and M. Fernández. 2021. Bryophyte and lichen biomass and nitrogen fixation in a high elevation cloud forest in Cerro de La Muerte, Costa Rica. *Oecologia* 195: 489–497. https://doi.org/10.1007/s00442-020-04840-4

Martius, C. F. P. 1817. *Flora cryptogamica erlangensis.* J.L.Schrag, 508 pp.

Massalongo, C. 1885. Epatiche raccolte alla Tierra del Fuoco. *Nuovo Giornale Botanico Italiano* 17(3): 201–277. https://bibdigital.rjb.csic.es/idurl/1/12379

Massalongo, C. 1897. *Hepaticae in provincia Schen-si.* G. Franchini, Verona, pp. 3–63.

Masuzaki, H., M. Shimamura, T. Furuki, H. Tsubota, T. Yamaguchi, H. M. A. Majid, and H. Deguchi. 2010. Systematic position of the enigmatic liverwort *Mizutania* (Mizutaniaceae, Marchantiophyta) inferred from molecular phylogenetic analyses. *Taxon* 59(2): 448–458. https://doi.org/10.1002/tax.592010

Matteri, C. M. 1985. Current state of Latin American bryology. *Journal of the Hattori Botanical Laboratory* 59: 481–486.

McAllister, F., P. Y. Hoglund, and E. Whitehouse. 1932. Catalogue of Texas Hepaticae. *Transactions of the Texas Academy of Science* 15: 39–58.

McCormick, F. A. 1914. A study of *Symphyogyna aspera. Contribution from the Hull Botanical Laboratory* 58: 1–418.

Meagher, D. 2008. "New Holland" is not necessarily Australia. *Australasian Bryological Newsletter* 55: 13. http://www.utas.edu.au/docs/plant_science/abn/

Meenks, J. L. D. 1987. Studies on Colombian cryptogams. XXVIII. A guide to the tropical Andean species of *Riccardia* (Hepaticae). *Journal of the Hattori Botanical Laboratory* 62: 161–182. https://doi.org/10.18968/jhbl.62.0_161

Meenks, J. L. D., and C. De Jong. 1985. Light microscope studies on the oil bodies of Andean Aneuraceae (Hepaticae). *Cryptogamie, Bryologie Lichénol.* 6(1): 1–24. https://www.biodiversitylibrary.org/item/290958#page/5/mode/1up

Mehra, P. N., and J. K. Sokhi. 1977. Embryology of *Cryptomitrium himalayense* Kash. *Journal of the Hattori Botanical Laboratory* 43: 157–190.

Mello, Z. R., H. R. Carvalho, H. R., and F. Giordano. 2011. Bryophytes of Guapituba Park, Maua, SP, Brazil [Briófitas do Parque Guapituba, Maua, SP, Brasil]. *Boletim do Instituto de Botânica. São Paulo* 21: 81–91.

Merrill, E. D. 1906. The flora of Lamao forest reserve. *Philippine Journal of Science,* suppl. 1: 1–141.

Merwin, M. C., S. R. Gradstein, and N. M. Nadkarni. 2001. Epiphytic bryophyte of Monteverde, Costa Rica. *Tropical Bryology* 20: 63–70. https://doi.org/10.11646/bde.20.1.10

Meylan, C. 1939. Localités nouvelles pour la flore des muscinées de la Suisse. *Bulletin de la Société Vaudoise des Sciences Naturelles* 60(249): 261–276. https://www.e-periodica.ch/digbib/view?pid=bsv-002%3A1937%3A60%3A%3A276#276

Mežaka, A., M. Y. Bader, N. Salazar Allen, and G. Mendieta-Leiva. 2020. Epiphyll specialization for leaf and forest successional stages in a tropical lowland rain forest. *Journal of Vegetation Science* 31(1): 118–128. https://doi.org/10.1111/jvs.12830

Michaux, A. 1803. *Flora boreali-americana, tomus.* Caroli Crapelet, Paris, 340 pp. https://doi.org/10.5962/bhl.title.691

Miller, H. A. 1963. Notes on Hawaiian Hepaticae. V. Collections from recent Swedish expeditions. *Arkiv* för *Botanik*, n.s., 5(2): 489–531.

Miller, H. A., H. O. Whittier, and B. A. Whittier. 1983. Prodromus florae hepaticarum Polynesiae. Catalogue of Hepaticae and Anthocerotae. *Bryophytorum Bibliotheca* 25: 1–423.

Mitten, W. 1851. Catalogue of cryptogamic plants collected by Professor W. Jameson in the vicinity of Quito (conclusion). *Hooker's Journal of Botany and Kew Gardens Miscellany* 3: 351–361. https://www.biodiversitylibrary.org/item/6321#page/363/mode/1up

Mitten, W. 1854a. Nat. Ord. CI. Hepaticae, L. In *The botany of the Antarctic voyage. II. Flora Novae Zealandiae. Part II. Flowerless plants*, ed. J. D. Hooker, pp. 125–160. Reeve & Co., London. https://doi.org/10.5962/bhl.title.16029

Mitten, W. 1854b. Hepaticae (in Flora of the Isthmus of Panama). In *The botany of the voyage of the H. M. S. Herald*, ed. B. Seemann, pp. 245–246. Reeve & Co., London. https://doi.org/10.5962/bhl.title.425

Mitten, W. 1855. Nat. Ord. CI. Hepaticae, L. In *The botany of the Antarctic voyage of H. M. discovery ships Erebus and Terror in the years 1839–43. II. Flora Novae Zealandiae 2*, ed. J. D. Hooker, pp. 161–172. Reeve & Co., London. https://doi.org/10.5962/bhl.title.16029

Mitten, W. 1860a. Hepaticae Indiae Orientalis. *Journal of the Proceedings of the Linnean Society. Botany* 5(18): 89–128. https://doi.org/10.1111/j.1095-8312.1860.tb01045.x

Mitten, W. 1860b. Hepaticae. In *The botany of the Antarctic voyage of H. M. discovery ships Erebus and Terror in the years 1839–43. III. Flora Tasmaniae 2*, ed. J. D. Hooker, pp. 221–241. Reeve & Co., London. https://doi.org/10.5962/bhl.title.16029

Mitten, W. 1864. A new genus of Hepaticae. *Journal of the Proceedings of the Linnean Society. Botany* 7(28): 243–244. https://doi.org/10.1111/j.1095-8312.1864.tb01067e.x

Mitten, W. 1865. The "Bryologia" of the survey of the 48th parallel of latitude. *Journal of the Proceedings of the Linnean Society. Botany* 8(29): 12–55. https://doi.org/10.1111/j.1095-8312.1864.tb01071.x

Mitten, W. 1870. Hepaticae. In *Natural history of the Azores, or Western Islands*, ed. F. Godman, pp. 316–328. John Van Voorst, London.

Mitten, W. 1877a. List of Hepaticae collected by the Rev. A. E. Eaton at the Cape of Good Hope. *Journal of the Linnean Society, Botany* 16(91): 187–197. https://doi.org/10.1111/j.1095-8339.1877.tb02316a.x

Mitten, W. 1877b. A list of Musci and Hepaticae collected in Kerguelen's Island by the Rev. A. E. Eaton. *Journal of the Linnean Society. Botany* 15(84): 193–197. https://doi.org/10.1111/j.1095-8339.1876.tb00238.x

Mitten, W. 1879. Hepaticae. *Philosophical Transactions of the Royal Society of London* 168: 396–401. https://doi.org/10.1098/rstl.1879.0038

Mizutani, M. 1961. A revision of Japanese Lejeuneaceae. *Journal of the Hattori Botanical Laboratory* 24: 115–302.

Mizutani, M. 1963. On some Indian species of the family Lejeuneaceae described by W. Mitten. *Journal of the Hattori Botanical Laboratory* 26: 171–184.

Mizutani, M. 1964. A small collection of New Caledonian hepatics. *Journal of the Hattori Botanical Laboratory* 27: 131–132.

Mizutani, M. 1966. Epiphyllous species of Lejeuneaceae from Sabah (North Borneo). *Journal of the Hattori Botanical Laboratory* 29: 153–170.

Mizutani, M. 1970. Lejeuneaceae, subfamilies Lejeuneoideae and Cololejeuneoideae, from Sabah (North Borneo). *Journal of the Hattori Botanical Laboratory* 33: 225–265.

Mizutani, M. 1977. Lejeuneaceae from the Philippines. *Journal of the Hattori Botanical Laboratory* 43: 127–136.

Montagne, J. F. C. 1835. Enumeration des Mousses et des Hépatiques recueillies par M. Leprieur dans la Guiane centrale, et description de plusieurs nouvelles espèces de ces deux familles. *Annales des Sciences Naturelles, Botanique*, sér. 2, 3: 193–219. https://www.biodiversitylibrary.org/item/111694#page/197/mode/1up

Montagne, J. F. C. 1838. Centurie de plantes cellulaires exotiques nouvelles (suite). *Annales des Sciences Naturelles, Botanique*, sér. 2, 9: 38–57. https://www.biodiversitylibrary.org/item/111692#page/44/mode/1up

Montagne, J. F. C. 1839a. Cryptogamae brasilienses. *Annales des Sciences Naturelles, Botanique*, sér. 2, 12: 42–55. https://www.biodiversitylibrary.org/item/150468#page/46/mode/1up

Montagne, J. F. C. 1839b. Florula boliviensis. In *Voyage dans l'Amérique Méridionale. Tome Septième.*, ed. A. d'Orbigny, pp. 1–119. Bertrand, Paris. http://gallica2.bnf.fr/ark:/12148/bpt6k97873x.image.r=frullania.f1.langEN

Montagne, J. F. C. 1840. Seconde centurie de plantes cellulaires exotiques nouvelles. Décades VI, VII et VIII. *Annales des Sciences Naturelles, Botanique*, sér. 2, 14: 321–350. https://www.biodiversitylibrary.org/item/111686#page/329/mode/1up

Montagne, J. F. C. 1841. Seconde centurie de plantes cellulaires exotiques nouvelles. Decades IX. *Annales des Sciences Naturelles, Botanique*, sér. 2, 16: 108–128. https://www.biodiversitylibrary.org/item/111687#page/114/mode/1up

Montagne, J. F. C. 1842a. Cryptogamae nilgherienses. *Annales des Sciences Naturelles, Botanique*, sér. 2, 18: 12–23. https://www.biodiversitylibrary.org/item/111688#page/16/mode/1up

Montagne, J. F. C. 1842b. Botanique. Plantes cellulaires. In *Histoire Physique, Politique et Naturelle de l'Ile de Cuba*, ed. R. D. J. Sagra, pp. 427–492. Arthus Bertrand, Paris. https://doi.org/10.5962/bhl.title.51128

Montagne, J. F. C. 1843. Quatrième centurie de plantes cellulaires exotiques nouvelles, décades I-VI. *Annales des Sciences Naturelles, Botanique*, sér. 2, 19: 238–266. https://www.biodiversitylibrary.org/item/129735#page/244/mode/1up

Montagne, J. F. C. 1845. Cinquième centurie de plantes cellulaires exotiques nouvelles. Décades VII à X. *Annales des Sciences Naturelles, Botanique*, sér. 3, 4: 346–367. https://www.biodiversitylibrary.org/item/129767#page/350/mode/1up

Montagne, J. F. C. 1855. Cryptogamia Guyanensis. *Annales des Sciences Naturelles, Botanique*, sér. 4, 3(5): 311–329. https://www.biodiversitylibrary.org/item/129792#page/317/mode/1up

Montagne, J. F. C. 1856a. Septième centurie de plantes cellulaires nouvelles. *Annales des Sciences Naturelles, Botanique*, sér. 4, 5: 333–374. https://www.biodiversitylibrary.org/item/129815#page/337/mode/1up

Montagne, J. F. C. 1856b. *Sylloge generum specierumque cryptogamarum.* Sumptibus J.-B. Ballière, Paris, 498 pp. https://doi.org/10.5962/bhl.title.5403

Montagne, J. F. C. 1856c. Huitième centurie de plantes cellulaires nouvelles tant indigènes qu'exotiques, décades I a III. *Annales des Sciences Naturelles, Botanique*, sér. 4, 6: 179–199. https://www.biodiversitylibrary.org/item/129814#page/183/mode/1up

Morales Can, J. 2011. Diversidad de hepáticas de los biotopos Cerro Cahuí, El Zotz y Laguna del Tigre, Petén, Guatemala. *Proyecto Fodecyt* 56(2007): 1–45.

Morales, M. I. 1991. Las Hepaticas comunicadas para Costa Rica. *Tropical Bryology* 4: 25–57. https://doi.org/10.11646/bde.4.1.6

Morales, M. I. 1992. La identidad de *Aphanolejeunea heterophylla* Schuster. *Tropical Bryology* 6: 133–137. https://doi.org/10.11646/BDE.6.1.14

Morales, M. I. 2009. Notes on *Cololejeunea standleyi* (Steph.) Herz., *C. subscariosa* (Spruce) Schust., *C. linopteroides* Robins. (Hepaticae Lejeuneaceae). *Cryptogamie, Bryologie* 30(2): 271–276. https://sciencepress.mnhn.fr/en/periodiques/bryologie/30/2/notes-cololejeunea-standleyi-steph-herz-c-subscariosa-spruce-schust-c-linopteroides-robins-hepaticae-lejeuneaceae

Morales, M. I., and G. Dauphin. 1998. A new species of *Cololejeunea* (Lejeuneaceae: Cololejeuneoideae) from Panama. *Tropical Bryology* 14: 133–136. https://doi.org/10.11646/BDE.14.1.16

Morales, M. I., and S. R. Gradstein. 1995. *Diplasiolejeunea involuta* Winkler, una especie poco conocida. *Tropical Bryology* 10: 75–80. https://doi.org/10.11646/BDE.10.1.12

Morales, M. I., and D. Griffin. 1983. Briófitos del Parque Nacional Volcán Poás, Costa Rica. *Revista de Biología Tropical* 31: 113–123. https://revistas.ucr.ac.cr/index.php/rbt/article/view/25132

Morales, M. I., and A. Lücking. 1995. *Aphanolejeunea winkleri* Morales & A. Lücking, a new species of Lejeuneaceae (Hepaticae, Cololejeuneoideae) from Costa Rica. *Nova Hedwigia* 60(1/2): 119–124.

Morales, T., and E. Moreno. 2009. Lista comentada de las Hepáticas (Marchantiophyta) de la region central de La Cordillera de la Costa Venezolana, colectadas por E. Rutkis. II. *Cryptogamie, Bryologie* 30(4): 443–455. https://sciencepress.mnhn.fr/en/periodiques/bryologie/30/4/lista-comentada-de-las-hepaticas-marchantiophyta-de-la-region-central-de-la-cordillera-de-la-costa-venezolana-colectadas-por-e-rutkis-ii

Morales, T., M. García, and N. Avendaño. 2007. Especies venezolanas de hepaticas (Marchantiophyta) pertenecientes al Herbario Nacional de Venezuela (VEN). *Cryptogamie, Bryologie* 28(1): 41–77. https://sciencepress.mnhn.fr/en/periodiques/bryologie/28/1/especies-venezolanas-de-hepaticas-marchantiophyta-pertenecientes-al-herbario-nacional-de-venezuela-ven

Morales, T., E. Moreno, and M. García. 2008. Briófitas del área recreativa del Jardín Botánico de Caracas. *Ernstia* 18: 37–58.

Morales-Marroquín, J. A., R. Solis Miranda R, J. Baldin Pinheiro, and M. I. Zucchi. 2022. Biodiversity Research in Central America: A Regional Comparison in Scientific Production Using Bibliometrics and Democracy Indicators. *Frontiers in Research Metrics and Analytics* 7(898818): 1–17. https://doi.org/10.3389/frma.2022.898818

Mota de Oliveira, S. 2010. *Diversity of epiphytic bryophytes across the Amazon.* Universiteit Utrecht, 154 pp.

Müller, J., J. Heinrich, and S. R. Gradstein. 1999. A revision of *Plagiochila* sect. *Plagiochila* in the Neotropics. *Bryologist* 102(4): 729–746. https://doi.org/10.2307/3244259

Müller, K. 1851. Die von Oersted in Mittelamerika gesammelten Lebermoose. *Botanische Zeitung. Berlin* 9(48): 913–915. https://www.biodiversitylibrary.org/item/105734#page/473/mode/1up

Müller, K. 1901. Vorarbeiten zu einer Monographie der Gattung *Scapania*. *Bulletin de l'Herbier Boissier*, sér. 2, 1(6): 593–614. https://www.biodiversitylibrary.org/item/105851#page/603/mode/1up

Müller, K. 1915. *Die Lebermoose (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz, 2 Aufl., 6 Band), 2 Abth., 24 Lieferung.* Eduard Kummer, Leipzig, Germany, pp. 593–656. https://doi.org/10.5962/bhl.title.1356

Mustelier, K. M. 2012. Nuevos registros de Lejeuneaceae (Marchantiophyta) para Cuba. *Briolatina* 61: 11–12.

Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858. https://doi.org/10.1038/35002501

Nagashima, F., H. Izumo, S. Takaoka, M. Tori, and Y. Asakawa. 1994. Sesqui- and diterpenoids from the Panamanian liverwort *Bryopteris filicina*. *Phytochemistry* 37(2): 433–439. https://doi.org/10.1016/0031-9422(94)85074-7

Nájera Acevedo, A. 2006. The conservation of the thorn scrub and dry forest of the Motagua Valley, Guatemala: Promoting the protection of unique ecoregion. *Lyonia* 9(2): 7–19.

Nees, C. G. 1830. *Enumeratio plantarum cryptogamicarum Javae et insularum adiacentium. Fasciculus prior, hepaticas complectens, ab editore illustratas.* Grass, Barth & Co., Breslau, 86 pp. https://doi.org/10.5962/bhl.title.44901

Nees, C. G. 1831. Berichtigungen zur Enumeratio plantarum cryptogamicarum Javae. *Linnaea* 6(4): 602–623. https://www.biodiversitylibrary.org/item/109832#page/610/mode/1up

Nees, C. G. 1833a. *Naturgeschichte der Europäischen Lebermoose*. Volume 1. August Rücker, Berlin, 347 pp. https://mdz-nbn-resolving.de/details:bsb10301458

Nees, C. G. 1833b. Hepaticae Hedw. In *Flora brasiliensis*, ed. C. F. P. Martius, pp. 294–390. Sumptibus J. G. Cottae, Stuttgart. https://doi.org/10.5962/bhl.title.454

Nees, C. G. 1836. *Naturgeschichte der Europäischen Lebermoose*. Volume 2. August Rücker, Berlin, 499 pp. https://mdz-nbn-resolving.de/details:bsb10301459

Nees, C. G. 1838a. *Naturgeschichte der Europäischen Lebermoose*. Volume 4. Grass, Barth & Co., Breslau, 539 pp. https://mdz-nbn-resolving.de/details:bsb10301461

Nees, C. G. 1838b. *Naturgeschichte der Europäischen Lebermoose*. Volume 3. Grass, Barth & Co., Breslau, 593 pp. https://mdz-nbn-resolving.de/details:bsb10301460

Nees, C. G., and J. F. C. Montagne. 1836. Jungermanniearum herbarii Montagneani species. *Annales des Sciences Naturelles, Botanique*, sér. 2, 5: 52–72. https://www.biodiversitylibrary.org/item/111695#page/56/mode/1up

Nieva, M. M., and M. M. Schiavone. 2002. El género *Metzgeria* (Metzgeriales-Hepatophyta) en los bosques montanos del Noroeste de Argentina. *Tropical Bryology* 21: 123–133. https://doi.org/10.11646/BDE.21.1.16

Norris, D. H., E. Kraichak, A. C. Risk, D. Lucas, D. J. Allard, F. Rosengren, T. A. Clark, N. Fenton, M. Tessler, N. Phephu, and E. T. Lennette. 2017. On the diversity and richness of understory bryophytes at Nectandra Cloud Forest Reserve, Costa Rica. *Biodiv. Data J.* 5(e11778): 1–18. https://doi.org/10.3897/BDJ.5.e11778

Nöske, N. M., S. R. Gradstein, H. Kürschner, G. Parolly, and S. Torracchi. 2003. Cryptogams of the Reserva Biológica San Francisco (Province Zamora-Chinchipe, Southern Ecuador) I. Bryophytes. *Cryptogamie, Bryologie* 24(1): 15–32. https://sciencepress.mnhn.fr/en/periodiques/bryologie/24/1/cryptogams-reserva-biologica-san-francisco-province-zamora-chinchipe-southern-ecuador-i-bryophytes

Ochyra, R., J. Váňa, V. R. Smith, and B. Cykowska-Marzencka. 2014. Seven liverwort species new or confirmed from subantarctic Prince Edward Island. *Herzogia* 27(2): 397–407. https://doi.org/10.13158/heia.27.2.2014.397

Oliveira-da-Silva, F. R., S. R. Gradstein, and A. L. Ilkiu-Borges. 2021. The genus *Radula* Dumort. (Radulaceae, Marchantiophyta) in Brazil. *Nova Hedwigia* 112(1/2): 29–163. https://doi.org/10.1127/nova_hedwigia/2020/0606

Oliveira-da-Silva, F. R., S. R. Gradstein, P. L. Viana, C. E. G. R. Schaefer, and A. L. Ilkiu-Borges. 2022. Bryophytes from Uei tepui (Serra do Sol), with liverworts new to Brazil and the description of *Leptoscyphus incisus* sp. nov. [Des bryophytes d'Uei tepui (Serra do Sol), avec des hépatiques nouvelles pour le Brésil et description de *Leptoscyphus incisus* sp. nov.]. *Cryptogamie, Bryologie* 43(4): 51–64. https://doi.org/10.5252/cryptogamie-bryologie2022v43a4

Oliveira-e-Silva, M. I. M. N., and O. Yano. 2000. Anthocerotophyta e Hepatophyta de Mangaratiba e Angra dos Reis, Rio de Janeiro, Brasil [Anthocerotophyta and Hepatophyta from Mangaratiba and Angra dos Reis, Río de Janeiro, Brazil]. *Boletim do Instituto de Botânica. São Paulo* 13: 1–102.

Olson, D. M., E. Dinerstein, E. D. Wikramanayake, N. D. Burgess, G. V. N. Powell, E. C. Underwood, J. A. D'Amico, I. Itoua, H. E. Strand, J. C. Morrison, C. J. Loucks, T. F. Allnutt, T. H. Ricketts, Y. Kura, J. F. Lamoreux, W. W. Wettengel, P. Hedao, and K. R. Kassem. 2001. Terrestrial ecoregions of the world: A new map of life on Earth. *BioScience* 51(11): 933–938. https://doi.org/10.1641/0006-3568(2001)051%5b0933:TEOTWA%5d2.0.CO;2

Onraedt. M. 1979. Bryophytes de Sri Lanka (Ceylan) IV. Le genre *Colura*. *Revue Bryologie Lichénologique* 45(4): 443–452. https://www.biodiversitylibrary.org/item/281569#page/457/mode/1up

Osakada, A., and R. C. L. Lisbôa. 2004. Novas ocorrências de hepáticas (Marchantiophyta) para o estado do Pará, Brasil [New occurrences of liverworts for the Pará state, Brazil]. *Acta Amazonica* 34(2): 197–200. https://doi.org/10.1590/S0044-59672004000200007

O'Shea, B. J., J. Eggers, R. A. Pursell, P. Sollman, and C. R. Stevenson. 1997. New bryophyte taxon records for tropical countries I. *Tropical Bryology* 13: 175–183. https://doi.org/10.11646/BDE.13.1.17

O'Shea, B. J., M. J. Wigginton, M. A. Bruggeman-Nannega, N. G. Hodgetts, and R. D. Porley. 2001. British Bryological Society Expedition to Mulanje mountain, Malawi. 13. New and other unpublished records. *Tropical Bryology* 20: 1–26. https://doi.org/10.11646/BDE.20.1.3

Ötvös, E., and I. Jócsák. 2011. Effects of elevated air CO^2 concentration on bryophytes: A review. In *Bryophyte ecology and climate change*, ed. Z. Tuba, N. G. Slack, and L. R. Stark, pp. 55–70. Cambridge University Press, Cambridge, U.K.

Pagán, F. M. 1939a. A preliminary list of the Hepaticae of Puerto Rico including Vieques and Mona Island. *Bryologist* 42(1): 1–12. https://doi.org/10.2307/3239058

Pagán, F. M. 1939b. A preliminary list of the Hepaticae of Puerto Rico including Vieques and Mona Island (concluded). *Bryologist* 42(3): 71–82. https://doi.org/10.2307/3239787

Pagán, F. M. 1939c. A preliminary list of the Hepaticae of Puerto Rico including Vieques and Mona Island (continued). *Bryologist* 42(2): 37–50. https://doi.org/10.2307/3239008

Pagán, F. M. 1942a. A new species of *Dendroceros* from Puerto Rico. *Bryologist* 45(4): 111–115. https://doi.org/10.2307/3239434

Pagán, F. M. 1942b. Catalogue of the Hepaticae of Guadeloupe. *Bryologist* 45(4): 76–110. https://doi.org/10.2307/3239433

Palisot de Beauvois, A. M. F. J. 1805a. *Asterella*. In *Dictionnaire des sciences naturelles,* Fasc. 3, ed. F. Cuvier, pp. 257–258. F. G. Levrault, Paris.

Palisot de Beauvois, A. M. F. J. 1805b. *Flore d'Oware*. Volume 1(3). Fain et Compagnie, Paris, pp. 17–82. https://doi.org/10.5962/bhl.title.101798

Parihar, N. S., B. Lal, and N. Katiyar. 1994. *Hepatics and Anthocerotes of India. A new annotated checklist.* Indian Universities Press, Allahabad, pp. 1–106.

Patiño, J., and A. Vanderpoorten. 2018. Bryophyte biogeography. *Critical Reviews in Plant Sciences* 37(2/3): 175–209. https://doi.org/10.1080/07352689.2018.1482444

Patiño, J., N. Devos, A. Vanderpoorten, A. Schäfer-Verwimp, and M. A. M. Renner. 2013. The identity of *Radula carringtonii* Jack. *Journal of Bryology* 35(4): 314–316. https://doi.org/10.1179/1743282013Y.0000000072

Paton, J. A. 1999. *The liverwort flora of the British Isles.* Harley Books, Colchester, 626 pp.

Pätsch, R., J. Hentschel, R. Linares-Palomino, R.-L. Zhu, and J. Heinrichs. 2010. Diversification and taxonomy of the liverwort *Jubula* Dumort. (Jungermanniopsida: Porellales) inferred from nuclear and chloroplast DNA sequences. *Systematic Botany* 35(1): 6–12. https://doi.org/10.1600/036364410790862515

Patzak, S. D. F., M. A. M. Renner, A. Schäfer-Verwimp, K. Feldberg, M. M. Heslewood, D. F. Peralta, A. Matos de Souza, H. Schneider, and J. Heinrichs. 2016. A phylogeny of Lophocoleaceae-Plagiochilaceae-Brevianthaceae and a revised classification of Plagiochilaceae. *Organisms, Diversity and Evolution* 16(3): 481–495. https://doi.org/10.1007/s13127-015-0258-y

Pearson, W. H. 1892. *Lejeuneae* madagascarienses. *Forhandlinger i Videnskabs-Selskabet i Kristiania* 1892(8): 3–9. https://www.biodiversitylibrary.org/item/148545#page/301/mode/1up

Peñaloza-Bojacá, G. F., J. C. Villarreal, and A. S. Maciel. 2019. Phylogenetic and morphological infrageneric classification of the genus *Dendroceros* (Dendrocerotaceae; Anthocerotophyta), with the addition of two new subgenera. *Systematics and Biodiversity* 17(7): 712–727. https://doi.org/10.1080/14772000.2019.1682080

Peñaloza-Bojacá, G. F., A. M. Sierra, H. Becher, K. S. Renzaglia, and J. C. Villarreal. 2022. Historical biogeography of the austral hornwort genus *Phaeomegaceros* (Dendrocerotaceae,. *Bryophyte Diversity and Evolution* 45(1): 44–66. https://doi.org/10.11646/bde.45.1.3

Peng, T., and R.-L. Zhu. 2014. A revision of the genus *Notothylas* (Notothyladaceae, Anthocerotophyta) in China. *Phytotaxa* 156(3): 156–164. https://doi.org/10.11646/phytotaxa.156.3.6

Peralta, D. F., and M. E. Reiner-Drehwald. 2013. *Cheilolejeunea laciniata* (Lejeuneaceae, Marchantiophyta), a new species from Southeastern Brazil. *Bryologist* 116(1): 53–57. https://doi.org/10.1639/0007-2745-116.1.053

Peréz, E. S., E. Secaira, C. Macias, S. Morales, and I. Amezcua, eds. 2008. *Plan de Conservación de los Bosques de Pino-Encino de Centroamérica y el Ave Migratoria* Dendroica chrysoparia. Fundación Defensores de la Naturaleza and The Nature Conservancy, Guatemala, 101 pp.

Pérez, M. E. 2006. *Composición de la hepatoflora en tres estados de sucesión vegetal: Bosque, guamil y cultivo, en las comunidades de Chelemá I y II, Tucurú, Alta Verapaz, Guatemala.* Universidad de San Carlos de Guatemala, Guatemala City, 60 pp. https://biblioteca-farmacia.usac.edu.gt/tesis/B159.pdf

Pérez, M. E. 2009. Catálogo de las hepáticas (Marchantiophyta) de Guatemala: una actualización. *Brenesia* 71–72: 3–12. http://biblioteca.museocostarica.go.cr/articulo.aspx?id=3067&art=14402

Pérez, M. E., and G. López-Medina. 2012. Listado preliminar de los musgos (Briophyta) y hepáticas (Marchantiophyta) del Departamento de Alta Verapaz. *Revista Guatemalensis* 15(1): 73–86.

Perold, S. M. 1994. Studies in the Marchantiales (Hepaticae) from southern Africa. 7. The genus *Cryptomitrium* (Aytoniaceae) and *C. oreades* sp. nov. *Bothalia* 24(2): 149–152. https://doi.org/10.4102/abc.v24i2.764

Perold, S. M. 1999. *Flora of Southern Africa. Hepatophyta. Part 1: Marchantiopsida. Fascicle 1: Marchantiidae.* National Botanical Institute, Pretoria, 252 pp.

Perry, J. 1991. *The pines of México and Central America.* Timber Press, Portland, OR.

Piippo, S. 1986. A monograph of *Lepidolejeunea* and *Luteolejeunea* (Lejeuneaceae: Hepaticae). *Acta Botanica Fennica* 132: 1–69.

Piippo, S. 1991. Bryophyte flora of the Huon Peninsula, Papua New Guinea. XXXIX. *Fossombronia* (Fossombroniaceae) and *Metzgeria* (Metzgeriaceae). *Acta Botanica Fennica* 143: 1–22.

Piippo, S., X.-L. He, and T. Koponen. 1997. Hepatics of northwestern Sichuan, China, with a checklist of Sichuan hepatics. *Annales Botanici Fennici* 34(1): 51–63. http://www.sekj.org/PDF/anbf34/anbf34-051p.ppp

Pitcairn, C. E. R., D. Fowler, and J. Grace. 1995. Deposition of fixed atmospheric nitrogen and foliar nitrogen content of bryophytes and *Calluna vulgaris* (L.) Hull. *Environmental Pollution* 88(2): 193–205. https://doi.org/10.1016/0269-7491(95)91444-P

Pócs, T. 1980. The epiphytic biomass and its effect on the water balance of two rain forest types in the Uluguru Mountains (Tanzania, East Africa). *Acta Botanica Academiae Scientiarum Hungaricae* 26(1/2): 143–167.

Pócs, T. 1984a. Synopsis of the African Lepidoziaceae K. Müll. In *Proceedings of the third meeting of the bryologists from Central and East Europe*, ed. J. Váňa, pp. 107–119. Charles University, Prague.

Pócs, T. 1984b. New or little known epiphyllous liverworts. III. The genus *Aphanolejeunea* Evans in Tropical Africa. *Cryptogamie, Bryologie, Lichénologie* 5(3): 239–267. https://www.biodiversitylibrary.org/item/290485#page/5/mode/1up

Pócs, T. 1984c. Present knowledge on *Aphanolejeunea* Evans. *Journal of the Hattori Botanical Laboratory* 55: 307–313. https://doi.org/10.18968/jhbl.55.0_307

Pócs, T. 1988. Biogeography of the Cuban bryophyte flora. *Taxon* 37(3): 615–621. https://doi.org/10.2307/1221103

Pócs, T. 1994. East African bryophytes, XIII. Bryophytes from the Bale Mountains, SE Ethiopia. 2. Hepaticae. *Fragmenta Floristica et Geobotanica* 39(1): 221–233.

Pócs, T. 2002. New or little known epiphyllous liverworts. IX. Two new neotropical *Cololejeunea* species. *Acta Botanica Hungarica* 44(3/4): 371–382. https://doi.org/10.1556/ABot.44.2002.3-4.13

Pócs, T. 2006a. New or little-known epiphyllous liverworts. X. On two new neotropical *Diplasiolejeunea* species. *Bryologist* 109(3): 408–414. https://doi.org/10.1639/0007-2745(2006)109%5b408:NOLELX%5d2.0.CO;2

Pócs, T. 2006b. East African bryophytes. XXII. Two new species, *Plagiochila artsii* and *Plagiochila hiroshiana* (Plagiochilaceae, Marchantiophyta). *Journal of the Hattori Botanical Laboratory* 100: 333–350. https://doi.org/10.18968/jhbl.100.0_333

Pócs, T. 2010. On some new or less known *Lejeunea* (Lejeuneaceae, Jungermanniopsida) species in tropical Africa. East African bryophytes, XXVII. *Nova Hedwigia Beiheft* 138: 99–116.

Pócs, T. 2011. East African bryophytes XXIX. The *Ceratolejeunea* (Lejeuneaceae) species of the Indian Ocean islands. *Polish Botanical Journal* 56(2): 131–153. http://maxbot.botany.pl/cgi-bin/pubs/data/article_pdf?id=2895

Pócs, T. 2012. Notes on the representatives of genus *Kurzia* G. Martens (Lepidoziaceae, Jungermanniopsida) in the Colombian Andes. *Acta Biologica Plantarum Agriensis* 2: 101–113. http://abpa.ektf.hu/uploads/papers/finalpdf/ABPA_2_from101to113.pdf

Pócs, T. 2020. New synonyms in Caribbean species of *Bazzania* Gray (Lepidoziaceae). *Nova Hedwigia Beiheft* 150: 159–164. https://doi.org/10.1127/nova-suppl/2020/159

Pócs, T. 2021. New or little-known epiphyllous liverworts, XXIV. A collection made in the Venezuelan Guayana at the foot of Salto Angel with description of *Cololejeunea bencei*. *Acta Botanica Hungarica* 63(3/4): 417–426. https://doi.org/10.1556/034.63.2021.3-4.11

Pócs, T., and A. Bernecker. 2009. Knowledge of *Aphanolejeunea* (Jungermanniopsida) after 25 years. *Polish Botanical Journal* 54(1): 1–11. http://maxbot.botany.pl/cgi-bin/pubs/data/article_pdf?id=1785

Pócs, T., and A. Bernecker. 2013. New or little known epiphyllous liverworts, XIX *Cololejeunea yelitzae*, a new neotropical species. *Acta Botanica Hungarica* 55(3/4): 385–391. https://doi.org/10.1556/ABot.55.2013.3-4.13

Pócs, T., and A. Lücking. 1996. The genus *Aphanolejeunea* A. Evans in the Guianas. In *Symposium* über *Botanische Systematik und Pflanzengeographie. Zusammenfassungen der Vorträge und Poster*, ed. H. Manitz, pp. 29–30, Friedrich-Schiller-Universität, Jena, Germany.

Pócs, T., and A. Lücking. 1997. The genus *Aphanolejeunea* A. Evans in the Guianas. *Haussknechtia, Beiheft* 7: 26–27.

Pócs, T., P. Tixier, and S. Jovet-Ast. 1967. Seconde contribution à la bryoflore du Nord Vietnam [Adatok Észak-Vietnám mohaflórájához. II]. *Botanikai Közlemenyek* 54(1): 27–38. http://real-j.mtak.hu/id/eprint/8173

Pócs, T., A. Bernecker, and P. Tixier. 2014. Synopsis of the neotropical species of *Cololejeunea* (Spruce) Schiffn. *Acta Botanica Hungarica* 56(1/2): 185–226. https://doi.org/10.1556/ABot.56.2014.1-2.14

Pócs, T., R.-L. Zhu, L. Söderström, A. Hagborg, and M. J. von Konrat. 2015a. Notes on Early Land Plants Today. 67. Notes on Lejeuneaceae subtribus Cololejeuneinae (Marchantiophyta). *Phytotaxa* 202(1): 63–68. https://doi.org/10.11646/phytotaxa.202.1.9

Pócs, T., R.-L. Zhu, M. E. Reiner-Drehwald, L. Söderström, A. Hagborg, and M. J. von Konrat. 2015b. Notes on Early Land Plants Today. 71. New synonyms, new names and new combinations in Lejeuneaceae (Marchantiophyta). *Phytotaxa* 208(1): 97–102. https://doi.org/10.11646/phytotaxa.208.1.10

Pócs, T., R. Ochyra, and H. Bednarek-Ochyra. 2016. *Lepidozia cupressina* (Marchantiopsida, Lepidoziaceae) in Sub-Saharan Africa, with a note on the taxonomic status of *L. chordulifera*. *Cryptogamie, Bryologie* 37(2): 125–147. https://doi.org/10.7872/cryb/v37.iss2.2016.125

Pócs, T., J. G. Graham, and M. J. von Konrat. 2022. New liverwort records from the Peruvian Andes. *Acta Botanica Hungarica* 64(1/2): 187–200. https://doi.org/10.1556/034.64.2022.1-2.10

Polakowsky, H. 1877. Bryophytas et cormophytas costaricenses anno 1875 lectas. *Journal of Botany, British and Foreign* 15: 225–231. https://www.biodiversitylibrary.org/item/108518#page/237/mode/1up

Polakowsky, H. 1879. Die Pflanzenwelt von Costa-Rica. Ein Beitrag zur Kenntniss de Pflanzen-Geographie und der flora von Central-Amerika. *Jahresbericht des Vereins für Erdkunde zu Dresden* 16: 25–124. https://mdz-nbn-resolving.de/details:bsb11607772

Powell, G., and S. Palminteri. 2023a. Central America: Southern Mexico, through Guatemala, El Salvador, and Honduras into northern Nicaragua. https://www.worldwildlife.org/ecoregions/nt0112 (accessed 20 February 2023).

Powell, G., and S. Palminteri. 2023b. Central American Atlantic Moist Forest. https://www.worldwildlife.org/ecoregions/nt0111 (accessed 20 February 2023).

Powell, G., S. Palminteri, and J. Schipper. 2023a. Central America: Western Costa Rica. https://www.worldwildlife.org/ecoregions/nt0119 (accessed 17 February 2023).

Powell, G., S. Palminteri, and J. Schipper. 2023b. Central America: Southern Nicaragua into Costa Rica and Panama (Isthmian-Atlantic moist forests ecoregion). http://worldwildlife.org/ecoregions/nt0129 (accessed 17 February 2023).

Powell, G., S. Palminteri, C. Locklin, and J. Schipper. 2023c. Central America: Panama and Colombia (Eastern Panamanian montane forests). http://worldwildlife.org/ecoregions/nt0122 (accessed 17 February 2023).

Powell, G., S. Palminteri, and J. Schipper. 2023d. Central America: On the Caribbean coast of Honduras and Nicaragua. https://www.worldwildlife.org/ecoregions/nt0306 (accessed 3 March 2023).

Prado, M. L. M., and A. L. Ilkiu-Borges. 2021. A taxonomic revision of the genus *Cyclolejeunea* (Marchantiophyta: Lejeuneaceae). *Nova Hedwigia* 113(1/2): 91–138. https://doi.org/10.1127/nova_hedwigia/2021/0650

Prantl, K. 1890. Verzeichniss der in diesem Bande erwähnten Pflanzen (Kryptogamen). *Hedwigia* 29: vii–xxix. https://www.biodiversitylibrary.org/item/13872#page/6/mode/1up

Prantl, K. 1891. Verzeichniss der in diesem Bande erwähnten Pflanzen (Kryptogamen). *Hedwigia* 30: v–xviii. https://www.biodiversitylibrary.org/item/13873#page/6/mode/1up

Prantl, K. 1892. Verzeichniss der in diesem Bande erwähnten Pflanzen (Kryptogamen). *Hedwigia* 31: viii–xxvii. https://www.biodiversitylibrary.org/item/13874#page/7/mode/1up

Promma, C., L.-N. Zhang, L. Shu, S. Chantanaorrapint, M. A. M. Renner, and R.-L. Zhu. 2018. *Radula deflexilobula* (Radulaceae, Marchantiophyta) from Thailand, a new species based on morphological and molecular data. *Cryptogamie, Bryologie* 39(4): 481–497. https://doi.org/10.7872/cryb/v39.iss4.2018.481

Proskauer, J. 1951a. Studies on Anthocerotales. III. *Bulletin of the Torrey Botanical Club* 78(4): 331–349. https://doi.org/10.2307/2481996

Proskauer, J. 1951b. Notes on Hepaticae. II. *Bryologist* 54(4): 243–266. https://doi.org/10.2307/3240002

Proskauer, J. 1955. Notes on Hepaticae. III. *Bryologist* 58(3): 192–200. https://doi.org/10.2307/3239904

Proskauer, J. 1958. Nachtrag zur Familie Anthocerotaceae. In *Die Lebermoose Europas (Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland,* Österreich *und der Schweiz, 3 Aufl., 6 Band), 2 Abth., 9 Lieferung*, ed. K. Müller, pp. 1303–1319. Akademische Verlagsgesellschaft, Leipzig, Germany.

Qui, Q., Y.-M. Wei, X.-F. Cheng, and R.-L. Zhu. 2014. Notes on Early Land Plants Today. 57. *Cheilolejeunea boliviensis* and *Cheilolejeunea savesiana*, two new synonyms in *Lejeunea* (Marchantiophyta, Lejeuneaceae). *Phytotaxa* 173(1): 88–90. https://doi.org/10.11646/phytotaxa.173.1.9

Qiu, Y. L., L. Li, B. Wang, Z. Chen, O. Dombrovska, J. Lee, L. Kent, R. Li, R. W. Jobson, T. A. Hendry, D. W. Taylor, C. M. Testa, and M. Ambros. 2007. Nonflowering land plant phylogeny inferred from nucleotide sequences of seven chloroplast, mitochondrial, and nuclear genes. *International Journal of Plant Sciences* 168(5): 691–708. https://doi.org/10.1086/513474

Raddi, G. 1818a. Novarum vel rariorum ex cryptogamia stirpium in agro florentino collectarum. *Opuscoli Scientifici* 2(6): 349–361.

Raddi, G. 1818b. *Jungermanniografia etrusca.*, Modena, 45 pp. https://www.biodiversitylibrary.org/item/34305#page/146/mode/1up

Raddi, G. 1822. *Crittogame brasiliane.* Società Tipografica, Modena, 33 pp. https://doi.org/10.5962/bhl.title.65673

Raeymaekers, G., G. Dauphin, and M. Meier. 1996. Report from the workshop "Briófitas, indicadores de biodiversidad" in Panamá. *The Bryological Times* 90: 4–5.

Rahmatpour, N., D. A. Hauser, J. M. Nelson, P. Y. Chen, J. C. Villarreal, M.-Y. Ho, and F.-W. Li. 2021. A novel thylakoid-less isolate fills a billion-year gap in the evolution of cyanobacteria. *Current Biology* 31: 2857–2867. https://doi.org/10.1016/j.cub.2021.04.042

Ramírez, F. J. 2007. *Comparación de la hepatoflora en dos condiciones de paisaje de la Sierra de Las Minas, Zacapa, Guatemala.* Universidad de San Carlos de Guatemala, Guatemala City, 62 pp. http://biblioteca.usac.edu.gt/tesis/06/06_2514.pdf.

Ramírez, M., N. Kamiya, A. Popich, Y. Asakawa, and A. Bardón. 2010. Insecticidal constituents from the Argentine liverwort *Plagiochila bursata*. *Chemistry and Biodiversity* 7: 1855–1861. https://doi.org/10.1002/cbdv.200900256

Rao, D. N. 1982. Responses of bryophytes to air pollution. In *Bryophyte ecology*, ed. A. J. E. Smith, pp. 445–471, Chapman & Hall, London.

Reed, C. F., and H. Robinson. 1971. Bryophytes of Monteverde, Costa Rica. *Phytologia* 21: 6–21. https://www.biodiversitylibrary.org/item/47413#page/14/mode/1up

Reimers, H. 1926. Beiträge zur Bryophytenflora Südamerikas I u. II. *Hedwigia* 66(1): 27–78. https://www.zobodat.at/pdf/Hedwigia_66_1926_0027-0078.pdf.

Reimers, H. 1933. Revision der Lebermoosgattung *Micropterygium*. *Hedwigia* 73(3/4): 133–204. https://www.zobodat.at/pdf/Hedwigia_73_1933_0133-0204.pdf.

Reimers, H. 1936. Nachtrag zur Revision der Lebermoosgattung *Micropterygium*. *Hedwigia* 76(3): 165–168. https://www.zobodat.at/pdf/Hedwigia_76_1936_0165-0168.pdf.

Reiner, M. E. 1988. Contribución al conocimiento de las hepáticas del noreste de la provincia de Buenos Aires (Argentina). Frullaniaceae (Jungermanniales). *Boletín de la Sociedad Argentina de Botánica* 25(3/4): 301–325.

Reiner-Drehwald, M. E. 1994. El género *Radula* Dum. (Radulaceae, Hepaticae) en el Noreste de Argentina. *Tropical Bryology* 9: 5–22. https://doi.org/10.11646/BDE.9.1.3

Reiner-Drehwald, M. E. 1995a. Las Lejeuneaceae (Hepaticae) de Misiones, Argentina. IV. *Aphanolejeunea*. *Tropical Bryology* 10: 29–40. https://doi.org/10.11646/BDE.10.1.7

Reiner-Drehwald, M. E. 1995b. *La familia Lejeuneaceae (Hepaticae) en Misiones, Argentina: Estudio taxonómico-florístico*. Universidad de Buenos Aires, Buenos Aires, 251 pp.

Reiner-Drehwald, M. E. 1999. Catalogue of the genus *Lejeunea* Lib. (Hepaticae) of Latin America. *Bryophytorum Bibliotheca* 54: 1–101.

Reiner-Drehwald, M. E. 2000a. Las Lejeuneaceae (Hepaticae) de Misiones, Argentina. VI. *Lejeunea* y *Taxilejeunea*. *Tropical Bryology* 19: 81–131. https://doi.org/10.11646/BDE.19.1.14

Reiner-Drehwald, M. E. 2000b. On *Potamolejeunea* and *Neopotamolejeunea* gen. nov. (Lejeuneaceae, Hepaticae). *Nova Hedwigia* 71(3/4): 447–464. https://doi.org/10.1127/nova/71/2000/447

Reiner-Drehwald, M. E. 2005a. *Taxilejeunea pulverulenta* (Lejeuneaceae, Jungermanniopsida), a poorly known species from the neotropics, is transferred to *Lejeunea*. *Cryptogamie, Bryologie* 26(1): 59–65. https://sciencepress.mnhn.fr/en/periodiques/bryologie/26/1/taxilejeunea-pulverulenta-lejeuneaceae-jungermanniopsida-poorly-known-species-neotropics-transferred-lejeunea

Reiner-Drehwald, M. E. 2005b. On *Lejeunea rotundifolia* and *Dicladolejeunea* (Lejeuneaceae, Jungermanniopsida). *Systematic Botany* 30(4): 687–692. https://doi.org/10.1600/036364405775097860

Reiner-Drehwald, M. E. 2005c. On *Amphilejeunea* and *Cryptogynolejeunea*, two small genera of Lejeuneaceae (Jungermanniopsida), and two common neotropical *Lejeunea* species. *Nova Hedwigia* 81(3/4): 395–411. https://doi.org/10.1127/0029-5035/2005/0081-0395

Reiner-Drehwald, M. E. 2006. Type studies on neotropical Lejeuneaceae (Jungermanniopsida). *Cheilolejeunea* and. *Nova Hedwigia* 83(3/4): 473–482. https://doi.org/10.1127/0029-5035/2006/0083-0473

Reiner-Drehwald, M. E. 2009. *Lejeunea adpressa* Nees (Lejeuneaceae), a widely distributed species of tropical America. *Cryptogamie, Bryologie* 30(3): 329–336. https://sciencepress.mnhn.fr/en/periodiques/bryologie/30/3/lejeunea-adpressa-nees-lejeuneaceae-widely-distributed-species-tropical-america

Reiner-Drehwald, M. E. 2010a. On *Lejeunea* subgenus *Nanolejeunea* (Lejeuneaceae, Jungermanniopsida). *Nova Hedwigia Beiheft* 138: 117–128.

Reiner-Drehwald, M. E. 2010b. A taxonomic revision of *Lejeunea deplanata* (Lejeuneaceae, Marchantiophyta) from tropical America. *Nova Hedwigia* 91(3/4): 519–532. https://doi.org/10.1127/0029-5035/2010/0091-0519

Reiner-Drehwald, M. E. 2015. *Lejeunea tunquiniensis* (Lejeuneaceae, Marchantiophyta), a new species from a humid montane forest in the Yungas region, Bolivia. *Nova Hedwigia* 100(3/4): 583–588. https://doi.org/10.1127/nova_hedwigia/2015/0249

Reiner-Drehwald, M. E., and A. Goda. 2000. Revision of the genus *Crossotolejeunea* (Lejeuneaceae, Hepaticae). *Journal of the Hattori Botanical Laboratory* 89: 1–54. https://doi.org/10.18968/jhbl.89.0_1

Reiner-Drehwald, M. E., and R. Grolle. 2012. Review of the genus *Rectolejeunea* (Lejeuneaceae, Marchantiophyta). *Nova Hedwigia* 95(3/4): 451–482. https://doi.org/10.1127/0029-5035/2012/0063

Reiner-Drehwald, M. E., and A. L. Ilkiu-Borges. 2007. *Lejeunea huctumalcensis*, a widely distributed Lejeuneaceae from the Neotropics, and its relation to *Ceratolejeunea*. *Bryologist* 110(3): 465–474. https://doi.org/10.1639/0007-2745(2007)110%5b465:LHAWDL%5d2.0.CO;2

Reiner-Drehwald, M. E., and A. Schäfer-Verwimp. 2008. On *Inflatolejeunea*, *Lejeunea* species with eplicate perianths and *Lejeunea talamancensis* sp. nov. from Costa Rica (Lejeuneaceae). *Nova Hedwigia* 87(3/4): 387–420. https://doi.org/10.1127/0029-5035/2008/0087-0387

Reiner-Drehwald, M. E., N. Salazar Allen, N., and C. C. Chung. 2013. New combinations and synonyms in neotropical Lejeuneaceae (Marchantiophyta), with description of *Lejeunea tamasii*, a new species from Barro Colorado Island, Panama. *Polish Botanical Journal* 58(2): 419–426. https://doi.org/10.2478/pbj-2013-0041

Reiner-Drehwald, M. E., A. Schäfer-Verwimp, and A. L. Ilkiu-Borges. 2018. New synonyms and national records for *Lejeunea* (Lejeuneaceae, Marchantiophyta) in Tropical America. *Bryophyte Diversity and Evolution* 40(1): 6–10. https://doi.org/10.11646/bde.40.1.2

Reinwardt, C. G. C., C. L. Blume, and C. G. Nees von Esenbeck. 1824a. Hepaticae iavanicae. *Nova Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum* 12(1): 181–238. https://www.biodiversitylibrary.org/item/113876#page/245/mode/1up

Reinwardt, C. G. C., C. L. Blume, and C. G. Nees von Esenbeck. 1824b. Hepaticarum iavanicarum, supplementum. *Nova Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum* 12(1): 409–417. https://www.biodiversitylibrary.org/item/113876#page/537/mode/1up

Reis, L. C., H. C. Oliveira, and K. C. Pôrto. 2020. *Drepanolejeunea pinnatiloba* Schiffn. (Lejeuneaceae): A rare species in Brazil rediscovered after 17 years. *Checklist* 16(3): 593–596. https://doi.org/10.15560/16.3.593

Renker, C., J. Heinrichs, T. Pröschold, H. Groth, and I. Holz. 2002. ITS sequences of nuclear ribosomal DNA support the generic placement and the disjunct range of *Plagiochila* (*Adelanthus*) *carringtonii*. *Cryptogamie, Bryologie* 23(1): 23–29.

Renner, M. A. M., and E. A. Brown. 2008. *Mnioloma* (Calypogeiaceae: Jungermanniopsida) in Australasia: How many species are there? *Fieldiana, Botany*, n.s., 47: 159–174. https://doi.org/10.3158/0015-0746-47.1.159

Renner, M. A. M., and P. de Lange. 2020. A revised circumscription for *Siphonolejeunea* and a new species from New Zealand. *Australian Systematic Botany* 33(3): 311–326. https://doi.org/10.1071/SB19035

Renner, M. A. M., S. D. F. Patzak, M. M. Heslewood, A. Schäfer-Verwimp, and J. Heinrichs. 2017a. Third time lucky? Another substantially revised sectional classification for Australasian *Plagiochila* (Plagiochilaceae: Jungermanniopsida). *Australian Systematic Botany* 30: 70–104. https://doi.org/10.1071/SB16038

Renner, M. A. M., M. M. Heslewood, S. D. F. Patzak, K. Feldberg, A. Schäfer-Verwimp, D. S. Rycroft, and J. Heinrichs. 2017b. The New Zealand endemic *Plagiochila caducifolia* is a disjunct population of *Plagiochila spinulosa* (Plagiochilaceae: Jungermanniopsida). *New Zealand Journal of Botany* 55(3): 276–292. https://doi.org/10.1080/0028825X.2017.1318756

Renner, M. A. M., S. R. Gradstein, A. L. Ilkiu-Borges, F. R. Oliveira-da-Silva, and C. Promma. 2022. Molecular and morphological evidence support the recognition of three genera within Radulaceae (Porellales: Marchantiophyta). *Bryophyte Diversity and Evolution* 45(1): 95–118. https://doi.org/10.11646/bde.45.1.7

Reyes, D. M. 1979. Nuevos reportes para la flora hepaticologica de América Latina, I. *Acta Botanica Academiae Scientiarum Hungaricae* 25: 359–360.

Reyes, D. M. 1982. El género *Diplasiolejeunea* en Cuba. *Acta Botanica Academiae Scientiarum Hungaricae* 28(1/2): 145–180.

Rico, R., and T. Pócs. 2004. Briofitos de las tierras altas de la Guayana Venezuelana: hepáticas del Roraima-tepui I. *Cryptogamie, Bryologie* 25(3): 249–269. https://sciencepress.mnhn.fr/en/periodiques/bryologie/25/3/briofitos-de-las-tierras-altas-de-la-guayana-venezolana-hepaticas-del-roraima-tepui-i

Rivera, Y., K. Mustelier, and A. Vicario. 2006. *Porella swartziana* (Weber) Trevis. (Porellaceae: Hepatophyta) nuevo registro para Cuba oriental. *Biodiversidad de Cuba Oriental* 8: 19–21.

Robinson, B. L. 1902. Flora of the Galapagos Islands. *Proceedings of the American Academy of Arts and Sciences* 38(4): 77–270. https://www.biodiversitylibrary.org/item/22276#page/91/mode/1up

Robinson, H. 1964. New taxa and new records of bryophytes from Mexico and Central America. *Bryologist* 67(4): 446–458. https://doi.org/10.2307/3240770

Robinson, H. 1967. Preliminary studies on the bryophytes of Colombia. *Bryologist* 70(1): 1–61. https://doi.org/10.2307/3241138

Robinson, H. 1970. Notes on the genus *Nowellia*. *Bryologist* 73(1): 150–152. https://doi.org/10.2307/3241596

Robinson, H. 1988. *Plagiochila rudischusteri*, a new species from the Paria Peninsula of Venezuela. *Beiheft zur Nova Hedwigia* 90: 199–202.

Robinson, H. 2019. Notes on 1964 Daniel Norris bryophyte collections from the Dominican Republic. *Evansia* 36(2): 59–62. https://doi.org/10.1639/0747-9859-36.2.59

Rodríguez-Castro, L., and N. Flores. 2021. Colonización de la hepática epífila *Leptolejeunea elliptica* (Lehm. & Lindenb.) Schiffn. (Lejeuneaceae), sobre dos especies de arbustos de la Isla Barro Colorado (BCI) [Colonisation of the epiphyllous liverwort *Leptolejeunea elliptica* (Lehm. & Lindenb.) Schiffn. (Lejeuneaceae) on two shrubs species from Barro Colorado Island (BCI)]. *Tecnociencia* 23(1): 81–103. https://doi.org/10.48204/j.tecno.v23n1a5

Rodríguez-Quiel, E. E., J. Klüge, G. Mendieta-Leiva, and M. Y. Bader. 2022. Elevational patterns in tropical bryophyte diversity differ among substrates: A case study on Baru volcano, Panama. *Journal of Vegetation Science* 33(3): e13136. https://doi.org/10.1111/jvs.13136

Romero, C. 1999. Reduced-impact logging effects on commercial non-vascular pendant epiphyte biomass in a tropical montane forest in Costa Rica. *Forest Ecology and Management* 118: 117–125. https://doi.org/10.1016/S0378-1127(98)00492-7

Romero, C., F. E. Putz, and K. Kitajima. 2006. Ecophysiology in relation to exposure of pendant epiphytic bryophytes in the canopy of a tropical Mountain Oak forest. *Biotropica* 38(1): 35–41. https://doi.org/10.1111/j.1744-7429.2006.00099.x

Ruklani, N. C. S., and S. C. K. Rubasinghe. 2022. Thalloid liverworts (Marchantiopsida) of Sri Lanka. *Phytotaxa* 551(1): 1–82. https://doi.org/10.11646/PHYTOTAXA.551.1.1

Ruklani, N. C. S., S. C. K. Rubasinghe, and J. C. Villarreal. 2016. Two new records of Sri Lankan hornworts, *Notothylas javanica* (Notothyladaceae) and *Megaceros flagellaris* (Dendrocerotaceae). *Cryptogamie, Bryologie* 37(4): 435–444. https://doi.org/10.7872/cryb/v37.iss4.2016.435

Rycroft, D. S., J. Heinrichs, W. J., and H. Anton. 2001. A phytochemical and morphological study of the liverwort *Plagiochila retrorsa* Gottsche, new to Europe. *Journal of Bryology* 23(1): 23–34. https://doi.org/10.1179/jbr.2001.23.1.23

Rycroft, D. S., W. J. Cole, J. Heinrichs, H. Groth, C. Renker, and T. Pröschold. 2002. Phytochemical, morphological, and molecular evidence for the occurrence of the neotropical liverwort *Plagiochila stricta* in the Canary Islands, new to Macaronesia. *Bryologist* 105(3): 363–372. https://doi.org/10.1639/0007-2745(2002)105%5b0363:PMAMEF%5d2.0.CO;2

Rycroft, D. S., H. Groth, and J. Heinrichs. 2004. Reinstatement of *Plagiochila maderensis* (Jungermanniopsida: Plagiochilaceae) based on chemical evidence and nrDNA ITS sequences. *Journal of Bryology* 26(1): 37–45. https://doi.org/10.1179/jbr.2004.26.1.37

Salazar Allen, N. 2001a. *Cyathodium bischlerianum*, sp. nov. (Marchantiales) a new species from the Neotropics. *Bryologist* 104(1): 141–145. https://doi.org/10.1639/0007-2745(2001)104%5b0141:CBSNMA%5d2.0.CO;2

Salazar Allen, N. 2001b. Las briofitas o musgos de los bosques nubosos. In *Puente Biológico*, ed. S. Heckadon, pp. 81–86. Smithsonian Tropical Research Institute, Panama.

Salazar Allen, N. 2018. Taxonomy and biology of tropical bryophytes workshop, Bocas Del Toro, Panama, August 14–16, 2017. *Bryological Times* 146: 20–21.

Salazar Allen, N., and C. C. Chung. 1997a. Proximación al catálogo de briófitos del Parque Nacional de Coiba (Panamá). In *Flora y Fauna del Parque Nacional de Coiba (Panamá). Inventario preliminar*, ed. S. Castroviejo, pp. 221–243. Real Jardín Botánico, Madrid.

Salazar Allen, N., and C. C. Chung. 1997b. Los briófitos. In *Guía de Campo. Parque Nacional de Coiba (Panamá)*, ed. M. Velayos, C. Monge, F. Posse, and S. Castroviejo, p. 105. AECI, Madrid.

Salazar Allen, N., and C. C. Chung. 2003. *The bryophytes (hornworts, liverworts and mosses) of the Bahia Honda region (Veraguas, Panama)*. Liquid Jungle Lab. Panama. http://www.liquidjunglelab.com/wp- content/uploads/2016/05/musci_generalities.pdf

Salazar Allen, N., and C. C. Chung. 2006. IV. The bryophytes (hornworts, liverworts and mosses) of the Bahía Honda region (Veraguas, Panama) [IV. Briófitas (antocerotes, hepáticas y musgos) de la región de Bahía Honda (Veraguas, Panamá)]. In *Estudios sobre la biodiversidad de la región de Bahía Honda (Veraguas, Panamá)*, ed. S. Castroviejo and A. Ibáñez, pp. 95–175. Consejo Superior de Investigaciones Científicas, Madrid.

Salazar Allen, N., and H. Korpelainen. 2006. Notes on neotropical *Cyathodium*. *Cryptogamie, Bryologie* 27(1): 85–96. https://sciencepress.mnhn.fr/en/periodiques/bryologie/27/1/notes-neotropical-cyathodium

Salazar Allen, N., C. Arrocha, and C. Chung. 1988. A report on the bryophyte flora of BCI, Panama. *American Journal of Botany* 75(6, part 2): 8.

Salazar Allen, N., E. Lépiz, and J. E. De Gracia. 2004. *Cyathodium foetidissimum* (Marchantiales), an Asiatic species new to tropical America. *Bryologist* 107(1): 41–46. https://doi.org/10.1639/0007-2745(2004)107%5b41:CFMAAS%5d2.0.CO;2

Salazar Allen, N., A. I. Santana, N. Gómez, C. C. Chung, and M. P. Gupta. 2017. Identification of volatile compounds from three species of *Cyathodium* (Marchantiophyta: Cyathodiaceae) and *Leiosporoceros dussii* (Anthocerotophyta: Leiosporocerotaceae) from Panama, and *C. foetidissimum* from Costa Rica [Identificación de compuestos volátiles de tres especies de *Cyathodium* (Marchantiophyta: Cyathodiaceae) y *Leiosporoceros dussii* (Anthocerotophyta: Leiosporocerotaceae) de Panama y *C. foetidissimum* de Costa Rica]. *Boletin de la Sociedad Argentina de Botanica* 52(2): 357–370. https://botanicaargentina.org.ar/identification-of-volatile-compounds-from-three-species-of-cyathodium-marchantiophyta-cyathodiaceae-and-leiosporoceros-dussii-anthocerotophyta-leiosporocerotaceae-from-panama-and-c-foetidissim/

Salazar Allen, N., J. A. Gudiño, M. B. Johnston, D. Santamaría, C. C. Chung, C. Arrocha, E. Rodriguez, and J. Spörle. 2021. The bryophytes (in J. W. Dalling, and B. L. Turner, *Fortuna Forest Reserve, Panama*). *Smithsonian Contributions to Botany* 112: 155–202. https://doi.org/10.5479/si.14315990

Salazar Allen, N., G. Dauphin, J. C. Villarreal, C. Caswel-Levy, J. Gudiño, E. R. Cox, B. A. Espinosa, K. Y. Hernández-Marcial, A. Mežaka, J. D. Ramírez-Román, L. Rodríguez, A. Rojas-Carvajal, M. C. Romero-Moreno, A. Tomitani, and K. Zeballos. 2022. Bryophytes on mangroves of Bocas del Toro, Panama. *Bryophyte Diversity and Evolution* 45(1): 133–150. https://doi.org/10.11646/bde.45.1.9

Sande Lacoste, C. M. van der. 1854. Novae species hepaticarum ex insula Java detexit Dr. F. Junghuhn. *Nederlandsch Kruidkundig Archief. Verslagen en Mededelingen der Nederlandsche Botanische Vereeniging* 3: 415–424. https://www.biodiversitylibrary.org/item/107163#page/447/mode/1up

Sande Lacoste, C. M. van der. 1856. *Synopsis hepaticarum javanicarum*. C. G. van der Post, Amsterdam, pp. 1–112. https://www.biodiversitylibrary.org/item/54361#page/13/mode/1up

Santos, N. D. 2008. *Hepáticas da Mata Atlântica do estado do Rio de Janeiro: diversidade, fitogeografia e conservação*. Instituto de Pesquisas Jardim Botânico do Rio de Janeiro Escola Nacional de Botânica Tropical, 143 pp.

Schäfer-Verwimp, A. 1989. New or interesting records of Brazilian Bryophytes, II. *Journal of the Hattori Botanical Laboratory* 67: 313–321. https://doi.org/10.18968/jhbl.67.0_313

Schäfer-Verwimp, A. 1992. New or interesting records of Brazilian Bryophytes, III. *Journal of the Hattori Botanical Laboratory* 71: 55–68. https://doi.org/10.18968/jhbl.71.0_55

Schäfer-Verwimp, A. 1996. New or interesting records of Brazilian bryophytes, V. *Candollea* 51: 283–302.

Schäfer-Verwimp, A. 1999. Some additions to the bryophyte flora of Dominica, West Indies. *Haussknechtia, Beiheft*. 9: 317–332.

Schäfer-Verwimp, A. 2001. *Diplasiolejeunea pluridentata* (Lejeuneaceae, Marchantiopsida), eine neue Art aus Costa Rica. *Haussknechtia* 8: 71–78. https://www.zobodat.at/pdf/Haussknechtia_8_2001_0071-0078.pdf

Schäfer-Verwimp, A. 2004. The genus *Diplasiolejeunea* (Lejeuneaceae, Marchantiopsida) in the tropical Andes, with description of two new species. *Cryptogamie, Bryologie* 25(1): 3–17. https://sciencepress.mnhn.fr/en/periodiques/bryologie/25/1/genus-diplasiolejeunea-lejeuneaceae-marchantiopsida-tropical-andes-description-two-new-species

Schäfer-Verwimp, A. 2012. *Cololejeunea tamasii* (Lejeuneaceae, Marchantiophyta), a new species from Panama. *Phytotaxa* 60: 9–12. https://doi.org/10.11646/phytotaxa.60.1.2

Schäfer-Verwimp, A. 2014. Towards a more complete knowledge of the liverwort flora of Panama. *Phytotaxa* 172(3): 201–234. https://doi.org/10.11646/phytotaxa.172.3.3

Schäfer-Verwimp, A., and C. Giancotti. 1993. New or interesting records of Brazilian bryophytes, IV. *Hikobia* 11: 285–293.

Schäfer-Verwimp, A., and T. Pócs. 2009. Contributions to the hepatic flora of the Dominican Republic, West Indies. *Acta Botanica Hungarica* 51(3/4): 367–425. https://doi.org/10.1556/ABot.51.2009.3-4.13

Schäfer-Verwimp, A., and E. Reiner-Drehwald. 2009. Some additions to the bryophyte flora of Guadeloupe, West Indies, and new synonyms in the genera *Diplasiolejeunea* and *Lejeunea* (Lejeuneaceae). *Cryptogamie, Bryologie* 30(3): 357–375. https://sciencepress.mnhn.fr/en/periodiques/bryologie/30/3/some-additions-bryophyte-flora-guadeloupe-west-indies-and-new-synonyms-genera-diplasiolejeunea-and-lejeunea-lejeuneaceae

Schäfer-Verwimp, A., and M. H. Van Melick. 2016. A contribution to the bryophyte flora of Jamaica. *Cryptogamie, Bryologie* 37(3): 305–348. https://doi.org/10.7872/cryb/v37.iss3.2016.305

Schäfer-Verwimp, A., and D. M. Vital. 1989. New or interesting records of Brazilian bryophytes. *Journal of the Hattori Botanical Laboratory* 66: 255–261. https://doi.org/10.18968/jhbl.66.0_255

Schäfer-Verwimp, A., R. Wilson, S. Yandún, K. Feldberg, M. Burghardt, J. Váňa, and J. Heinrichs. 2006. Additions to the bryophyte flora of Ecuador. *Cryptogamie, Bryologie* 27(3): 313–332. https://sciencepress.mnhn.fr/en/periodiques/bryologie/27/3/additions-bryophyte-flora-ecuador

Schäfer-Verwimp, A., D. F. Peralta, and S. M. Costa Siqueira. 2012. *Frullania curvilobula* (Frullaniaceae, Marchantiophyta), a new species from Brazil. *Phytotaxa* 57(4): 27–30. https://doi.org/10.11646/phytotaxa.57.1.5

Schäfer-Verwimp, A., M. Lehnert, and M. Nebel. 2013. Contribution to the knowledge of the bryophyte flora of Ecuador. *Phytotaxa* 128(1): 1–63. https://doi.org/10.11646/phytotaxa.128.1.1

Schäfer-Verwimp, A., K. Feldberg, S. Dong, H. van Melick, D. F. Peralta, A. R. Schmidt, H. Schneider, and J. Heinrichs. 2014. Towards a monophyletic classification of Lejeuneaceae III: The systematic position of *Leiolejeunea*. *Phytotaxa* 170(3): 187–198. https://doi.org/10.11646/phytotaxa.170.3.4

Schäfer-Verwimp, A., J. Bechteler, H. Van Melick, M. A. M. Renner, and J. Heinrichs. 2017. *Lepidolejeunea grandiocellata* sp. nov. (Lejeuneaceae, Porellales), a new leafy liverwort from the West Indies based on morphological and molecular evidence. *Cryptogamie, Bryologie* 38(3): 253–263. https://doi.org/10.7872/cryb/v38.iss3.2017.253

Schäfer-Verwimp, A., G. Winter, G., Y.-C. Hsu, S.-H. Lin, J.-D. Yang, and K.-Y. Yao. 2019. New and interesting bryophyte records for Taiwan. *BryoString* 6: 1–15.

Scheben, A., J. Bechteler, G. E. Lee, T. Pócs, A. Schäfer-Verwimp, and J. Heinrichs. 2016. Multiple transoceanic dispersals and geographical structure in the pantropical leafy liverwort *Ceratolejeunea* (Lejeuneaceae, Porellales). *Journal of Biogeography* 43(9): 1739–1749. https://doi.org/10.1111/jbi.12779

Schiffner, V. 1890. Lebermoose (Hepaticae) mit Zugrundelegung der von Dr. A.C.M. Gottsche ausgeführten Vorarbeiten. In *Die Forschungsreise S. M. S. "Gazelle," IV. Theil. Botanik 4*, ed. F. C. Naumann, pp. 1–45. Ernst Siegfried Mittler und Sohn, Berlin. https://doi.org/10.5962/bhl.title.984

Schiffner, V. 1893a. Hepaticae. In *Die Natürlichen Pflanzenfamilien, Teil. I, Abt. 3*, ed. A. Engler and K. Prantl, pp. 1–141. Engelmann, Leipzig, Germany. https://doi.org/10.5962/bhl.title.4635

Schiffner, V. 1893b. Ueber exotische Hepaticae, hauptsächlich aus Java, Amboina und Brasilien, nebst einigen morphologischen und kritischen Bemerkungen über *Marchantia*. *Nova Acta Academiae Caesareae Leopoldino-Carolinae Germanicae Naturae Curiosorum* 60(2): 219–316. https://www.biodiversitylibrary.org/item/46040#page/245/mode/1up

Schiffner, V. 1894. Revision der Gattungen *Bryopteris*, *Thysananthus*, *Ptychanthus* und *Phragmicoma* im Herbarium des Berliner Museums. *Hedwigia* 33(4): 170–189. https://www.biodiversitylibrary.org/item/13876#page/218/mode/1up

Schiffner, V. 1897. Revision der Gattungen *Omphalanthus* und *Lejeunea* im Herbarium des Berliner Museums. *Botanische Jahrbücher* für *Systematik, Pflanzengeschichte und Pflanzengeographie* 23(5): 578–600. https://www.biodiversitylibrary.org/item/681#page/596/mode/1up

Schiffner, V. 1898a. *Conspectus hepaticarum archipelagi indici.* Staatsdruckerei, Batavia, 382 pp.

Schiffner, V. 1898b. Expositio plantarum in itinere suo indico annis 1893/94 suscepto collectarum. *Denkschriften der Kaiserlichen Akademie der Wissenschaften, Wien. Mathematisch-Naturwissenschaftliche Klasse* 67: 153–203. https://www.biodiversitylibrary.org/page/27925059#page/193/mode/1up

Schiffner, V. 1903. Kritische Bemerkungen über die europäischen Lebermoose mit Bezug auf die Exemplare des Exsiccatenwerkes, Hepaticae Europaeae exsiccatae 3 (101–150). *Sitzungsberichte des deutschen naturwissenschaftlich-medicinischen Vereins für Böhmen "Lotos" in Prag* 51(7): 213–275. https://www.biodiversitylibrary.org/item/50192#page/223/mode/1up

Schiffner, V. 1910. Über die Gattungen *Chiloscyphus* und *Heteroscyphus* n. gen. Österreichische *Botanische Zeitschrift* 60(5): 169–173. https://doi.org/10.1007/BF01631854

Schiffner, V. 1911. Über einige neotropische *Metzgeria*-Arten, Schluß. Österreichische *Botanische Zeitschrift* 61(7/8): 261–264. https://doi.org/10.1007/BF01634594

Schiffner, V. 1944. *Myriocoleopsis*, eine neue Gattung der Jubuleae. *Hedwigia* 81(5/6): 234–237. https://www.zobodat.at/pdf/Hedwigia_81_1942_0234-0237.pdf

Schiffner, V., and S. W. Arnell. 1964. Ergebnisse der Botanischen Expedition der kaiserlichen Akademie der Wissenschaften nach Südbrasilien 1901. II. Thallophyta und Bryophyta. Hepaticae (Lebermoose). Österreichische *Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Klasse, Denkschriften* 111: 1–156. https://www.zobodat.at/pdf/DAKW_111_0003-0156.pdf

Schipper, J. 2023a. Central American Atlantic Moist forests. https://www.oneearth.org/ecoregions/central-american-atlantic-moist-forests/ (accessed 20 February 2023).

Schipper, J. 2023b. Panamanian Dry Forests. https://www.oneearth.org/ecoregions/panamanian-dry-forests/ (accessed 3 March 2023).

Schipper, J. 2023c. Mesoamerican Gulf-Caribbean mangroves. https://www.oneearth.org/ecoregions/mesoamerican-gulf-caribbean-mangroves/ (accessed 7 March 2023).

Schipper, J. 2023d. Southern Mesoamerican Pacific mangroves. https://www.oneearth.org/ecoregions/southern-mesoamerican-pacific-mangroves/ (accessed 7 March 2023).

Schmitt, U., and S. Winkler. 1968. Systematische Untersuchungen über die foliose Lebermoosgattung *Stephaniella* Jack. Österreichische *Botanische Zeitschrift* 115(2): 120–133. https://doi.org/10.1007/BF01373533

Schrader, H. A. 1797. *Systematische Sammlung Kryptogamischer Gewächse, Zweyte Lieferung*. J. C. Dietrich, Göttingen, 16 pp.

Schuette, S. W., and R. E. Stotler. 2005. A conspectus of the liverwort genus *Jensenia* in Latin America. *Journal of the Hattori Botanical Laboratory* 97: 299–308. https://doi.org/10.18968/jhbl.97.0_299

Schulz, F., and J. Dengler. 2006. *Verbreitungsatlas der Moose in Schleswig-Holstein und Hamburg*. Landesamt für Natur und Umwelt des Landes Schleswig-Holstein, 400 pp.

Schultze-Motel, W., and M. Menzel. 1987. Die Lebermoosflora im BRYOTROP-Transekte von Peru. *Beiheft zur Nova Hedwigia* 88: 61–104.

Schumacker, R., and J. Váňa. 1999. Two new liverworts for Europe in Macaronesia: *Odontoschisma prostratum* (Sw.) Trevis. on the Azores and *Jungermannia callithrix* Lindenb. & Gottsche on the Azores and Madeira. *Tropical Bryology* 17: 115–127. https://doi.org/10.11646/bde.17.1.14

Schuster, R. M. 1949. The ecology and distribution of Hepaticae in central and western New York. *American Midland Naturalist* 42(3): 513–712. https://doi.org/10.2307/2421930

Schuster, R. M. 1953. Boreal Hepaticae. A manual of the liverworts of Minnesota and adjacent regions. *American Midland Naturalist* 49(2): 257–684. https://doi.org/10.2307/2422089

Schuster, R. M. 1954. Notes on Nearctic Hepaticae. VIII. Lejeuneaceae Holostipae of North America. *Journal of the Elisha Mitchell Scientific Society* 70(1): 42–56. https://www.jstor.org/stable/24334339

Schuster, R. M. 1955a. North American Lejeuneaceae. II. Paradoxae: The genera *Aphanolejeunea* and *Leptocolea*. *Journal of the Elisha Mitchell Scientific Society* 71(1): 126–148. https://www.jstor.org/stable/24334409

Schuster, R. M. 1955b. North American Lejeuneaceae. III. Paradoxae: *Cololejeunea*, Sectio. *Minutissimae*. *Journal of the Elisha Mitchell Scientific Society* 71(2): 218–247. https://www.jstor.org/stable/24334462

Schuster, R. M. 1956a. North American Lejeuneaceae. V. Schizostipae: *Ceratolejeunea*. *Journal of the Elisha Mitchell Scientific Society* 72(2): 292–316. https://www.jstor.org/stable/24333080

Schuster, R. M. 1956b. Notes on American Lejeuneaceae. IV. Paradoxae: *Cololejeunea* (concl.), *Diplasiolejeunea*. *Journal of the Elisha Mitchell Scientific Society* 72(1): 87–125. https://www.jstor.org/stable/24334322

Schuster, R. M. 1957. North American Lejeuneaceae. VI. *Lejeunea*. Introduction and keys; subgenus *Lejeunea*. *Journal of the Elisha Mitchell Scientific Society* 73(1): 122–197. https://www.jstor.org/stable/24333924

Schuster, R. M. 1959. A monograph of the nearctic Plagiochilaceae. Part. II. Sectio *Zonatae* through Sectio *Parallelae*. *American Midland Naturalist* 62(2): 257–395. https://doi.org/10.2307/2422533

Schuster, R. M. 1960. A monograph of the nearctic Plagiochilaceae. Part. III. Sectio *Contiguae* to conclusion. *American Midland Naturalist* 63(1): 1–130. https://doi.org/10.2307/2422932

Schuster, R. M. 1962. North American Lejeuneaceae. VIII. *Lejeunea* subgenera *Microlejeunea* and *Chaetolejeunea*. *Journal of the Hattori Botanical Laboratory* 25: 1–80.

Schuster, R. M. 1963a. Studies on antipodal Hepaticae. I. Annotated keys to the genera of antipodal Hepaticae with special reference to New Zealand and Tasmania. *Journal of the Hattori Botanical Laboratory* 26: 185–309.

Schuster, R. M. 1963b. An annotated synopsis of the genera and subgenera of Lejeuneaceae. I. Introduction; annotated keys to subfamilies and genera. *Beiheft zur Nova Hedwigia* 9: 1–203.

Schuster, R. M. 1965. Studies on Hepaticae. XXVI. The *Bonneria-Paracromastigum-Pseudocephalozia- Hyalolepidozia-Zoopsis-Pteropsiella* complex and its allies – a phylogenetic study. *Nova Hedwigia* 10(1/2): 19–61.

Schuster, R. M. 1966. *The Hepaticae and Anthocerotae of North America. I.* Columbia University Press, New York, 802 pp.

Schuster, R. M. 1967. North American Lejeuneaceae. X. *Harpalejeunea*, *Drepanolejeunea*, and *Leptolejeunea*. *Journal of the Elisha Mitchell Scientific Society* 83(4): 192–229. https://www.jstor.org/stable/24334736

Schuster, R. M. 1968a. Studies on the Hepaticae, XXIX-XLIV. A miscellany of new taxa and new range extensions. *Nova Hedwigia* 15(2/4): 437–529.

Schuster, R. M. 1968b. Studies on Hepaticae. XLV. On *Iwatsukia* Kitagawa. *Bulletin of the National Science Museum, Tokyo*, n.s., 11(3): 309–317.

Schuster, R. M. 1969a. *The Hepaticae and Anthocerotae of North America. II.* Columbia University Press, New York, 1062 pp.

Schuster, R. M. 1969b. Studies on Hepaticae XLVI-XLVII. On *Alobiella* (Spr.) Schiffn. and *Alobiellopsis* Schust. *Bulletin of the National Science Museum, Tokyo*, n.s., 12(3): 659–683.
Schuster, R. M. 1970. Studies on Hepaticae, XLIX-LIII. New Lejeuneaceae from Dominica and Jamaica. *Bulletin of the Torrey Botanical Club* 97(6): 336–352. https://doi.org/10.2307/2483854
Schuster, R. M. 1971a. The ecology and distribution of Hepaticae in a mahogany hammock in tropical Florida. *Castanea* 36(2): 90–111. https://www.jstor.org/stable/4032309
Schuster, R. M. 1971b. Studies on Cephaloziellaceae. *Nova Hedwigia* 22: 121–265.
Schuster, R. M. 1972. Phylogenetic and taxonomic studies in Jungermanniidae. *Journal of the Hattori Botanical Laboratory* 36: 321–405.
Schuster, R. M. 1974. *The Hepaticae and Anthocerotae of North America. III.* Columbia University Press, New York, 880 pp.
Schuster, R. M. 1978a. Studies on Venezuelan Hepaticae. I. *Phytologia* 39(4): 239–251. https://www.biodiversitylibrary.org/item/47392#page/253/mode/1up
Schuster, R. M. 1978b. Studies on Venezuelan Hepaticae. II. *Phytologia* 39(6): 425–432. https://www.biodiversitylibrary.org/item/47392#page/443/mode/1up
Schuster, R. M. 1980a. Phylogenetic studies on Jungermanniidae II. Radulineae (Part I). *Nova Hedwigia* 32: 637–693.
Schuster, R. M. 1980b. New combinations and taxa of Hepaticae I. *Phytologia* 45(5): 415–437. www.biodiversitylibrary.org/item/48954#page/431/mode/1up
Schuster, R. M. 1980c. Studies on Hepaticae. LIV-LVIII. *Kurzia* v. Mart. [*Microlepidozia* (Spr.) Joerg.], *Megalembidium* Schust., *Psiloclada* Mitt., *Drucella* Hodgs. and *Isolembidium* Schust. *Journal of the Hattori Botanical Laboratory* 48: 337–421.
Schuster, R. M. 1980d. *The Hepaticae and Anthocerotae of North America. IV.* Columbia University Press, New York, 1334 pp.
Schuster, R. M. 1983a. Phytogeography of the Bryophyta. In *New Manual of Bryology,* Volume 1, ed. R. M. Schuster, pp. 463–626. Hattori Botanical Laboratory, Nichinan, Japan.
Schuster, R. M. 1984. Diagnoses of some new taxa of Hepaticae. *Phytologia* 56(2): 65–74. https://www.biodiversitylibrary.org/item/47412#page/75/mode/1up
Schuster, R. M. 1987. Venezuelan Hepaticae IV. *Amphilejeunea* Schust. And *Aureolejeunea* Schust. *Nova Hedwigia* 44: 1–23.
Schuster, R. M. 1990. Origins of neotropical leafy Hepaticae. *Tropical Bryology* 2: 239–264. https://doi.org/10.11646/BDE.2.1.20
Schuster, R. M. 1992a. *The Hepaticae and Anthocerotae of North America. V.* Columbia University Press, New York, 854 pp.
Schuster, R. M. 1992b. The oil-bodies of the Hepaticae. II. Lejeuneaceae (part 2). *Journal of the Hattori Botanical Laboratory* 72: 163–359. https://doi.org/10.18968/jhbl.72.0_151
Schuster, R. M. 1992c. *The Hepaticae and Anthocerotae of North America. VI.* Columbia University Press, New York, 937 pp.
Schuster, R. M. 1993. Studies on Hepaticae, LXII-LXIV. Lepidoziaceae subfamily Zoopsidoideae (1). *Nova Hedwigia* 56(1/2): 35–59.
Schuster, R. M. 1994. Studies on Lejeuneaceae. I. Preliminary studies on new genera of Lejeuneaceae. *Journal of the Hattori Botanical Laboratory* 75: 211–235. https://doi.org/10.18968/jhbl.75.0_211
Schuster, R. M. 1995a. Phylogenetic and taxonomic studies of Jungermanniidae. III. Calypogeiaceae. *Fragmenta Floristica et Geobotanica* 40(2): 825–888.
Schuster, R. M. 1995b. The Hepaticae of Prince Edward Islands. II. On *Gymnocoleopsis* (Schust.) Schust., *Lophozia cylindriformis* (Mitt.) Steph. and the subgeneric classification of the genus *Lophozia* Dumort. *Journal of the Hattori Botanical Laboratory* 78: 119–135. https://doi.org/10.18968/jhbl.78.0_119
Schuster, R. M. 1996a. Studies on Lejeuneaceae II. Neotropical taxa of *Drepanolejeunea* (Spr.) Schiffn. *Nova Hedwigia* 62(1/2): 1–46.
Schuster, R. M. 1996b. Studies on antipodal Hepaticae. XII. Gymnomitriaceae. *Journal of the Hattori Botanical Laboratory* 80: 1–147. https://doi.org/10.18968/jhbl.80.0_1
Schuster, R. M. 1997. On *Campanocolea* Schust. And asexual reproduction in the Geocalycaceae. *Journal of the Hattori Botanical Laboratory* 82: 253–259. https://doi.org/10.18968/jhbl.82.0_253
Schuster, R. M. 1999. Studies on Hepaticae. LXVII-LXVIII. Lepidoziaceae subfamily Zoopsidoideae (4): *Monodactylopsis* and *Pteropsiella*. *Nova Hedwigia* 69(3/4): 517–540.
Schuster, R. M. 2000a. Studies on Lejeuneaceae. II. *Rectolejeunea* Evs. Emend. Schust. (Lejeuneoideae). *Journal of the Hattori Botanical Laboratory* 89: 113–150. https://doi.org/10.18968/jhbl.89.0_113
Schuster, R. M. 2000b. Studies on Lejeuneaceae. III. Revisionary studies on *Stenolejeunea* Schust. *Journal of the Hattori Botanical Laboratory* 89: 151–170. https://doi.org/10.18968/jhbl.89.0_151
Schuster, R. M. 2000c. Austral Hepaticae. Part 1. *Nova Hedwigia Beiheft* 118: 1–524.
Schuster, R. M. 2001a. Studies on Hepaticae. LXI. Trichocoleaceae. *Nova Hedwigia* 73(3/4): 461–486.
Schuster, R. M. 2001b. Revisionary studies on austral Acrobolbaceae, I. *Journal of the Hattori Botanical Laboratory* 90: 97–166. https://doi.org/10.18968/jhbl.90.0_97
Schuster, R. M. 2002. Austral Hepaticae. Part II. *Nova Hedwigia Beih.* 119: 1–606.
Schuster, R. M. 2006. Studies on Lejeuneaceae. V. *Leucolejeunea* and allies. *Journal of the Hattori Botanical Laboratory* 100: 361–406. https://doi.org/10.18968/jhbl.100.0_361
Schuster, R. M. 2021. Austral Hepaticae III. *Nova Hedwigia Beiheft* 120: 1–721.
Schuster, R. M., and J. J. Engel. 1974. A monograph of the genus *Pseudocephalozia* (Hepaticae). *Journal of the Hattori Botanical Laboratory* 38: 665–701.
Schuster, R. M., and N. A. Konstantinova. 1996. Studies on the distribution of critical arctic/subarctic Hepaticae with special reference to taxa found in Russia. *Lindbergia* 21(1): 26–48. https://www.jstor.org/stable/20149914
Schütz, N., D. Quandt, and M. Nebel. 2016. The position of the genus *Apopellia* stat. nov. within the Pelliales (Marchantiophytina: Jungermanniopsida). *Taxon* 65(2): 221–234. https://doi.org/10.12705/652.1
Schweinitz, L. D. 1821. *Specimen florae americae septentrionalis cryptogamicae.* J. Gales, Raleigh, 27 pp. https://doi.org/10.5962/bhl.title.62456
Scopoli, J. A. 1772. *Flora carniolica. Tom. II. Editio secunda.* Joannis Pauli Krauss, Viennae [Wien], 496 pp. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=983
Sérgio, C. 1987. Contribuição para o estudo taxonómico e fitogeográfico de Anthoceros caucasicus Steph. Na península Ibérica e Macaronésia. In *Actas del VI Simposio Nacional de Botánica Criptogámica*, pp. 605–614. Granada University, Granada, Spain.
Sharma, D., and S. C. Srivastava. 1993. Indian Lepidoziinae (a taxonomic revision). *Bryophytorum Bibliotheca* 47: 1–353.
Shaw, B., B. J. Crandall-Stotler, J. Váňa, R. E. Stotler, M. J. von Konrat, J. J. Engel, E. C. Davis, D. G. Long, P. Sova, and A. J. Shaw. 2015. Phylogenetic relationships and morphological evolution in a major clade of leafy liverworts (phylum Marchantiophyta, order Jungermanniales): Suborder Jungermanniineae. *Systematic Botany* 40(1): 27–45. https://doi.org/10.1600/036364415X686314
Shi, X.-Q., and R.-L. Zhu. 2015. A revision of *Archilejeunea* s.str. (Lejeuneaceae, Marchantiophyta). *Nova Hedwigia* 100(3/4): 589–601. https://doi.org/10.1127/nova_hedwigia/2015/0246
Shi, X.-Q., S. R. Gradstein, and R.-L. Zhu. 2015. Phylogeny and taxonomy of *Archilejeunea* (Spruce) Steph. (Lejeuneaceae subfam. Ptychanthoideae, Marchantiophyta) based on molecular markers and morphology. *Taxon* 64(5): 881–892. https://doi.org/10.1127/10.12705/645.1
Shu, L., and R.-L. Zhu. 2019. *Leptolejeunea nigra* (Lejeuneaceae), a new species with brownish black ocelli based upon morphology and DNA sequences. *Phytotaxa* 427(1): 31–42. https://doi.org/10.11646/phytotaxa.427.1.4
Shu, L., X.-F. Cheng, A. E. D. Daniels, K.-T. Yong, and R.-L. Zhu. 2015. Taxonomy and distribution of *Cheilolejeunea larsenii* Mizut. (Marchantiophyta, Lejeuneaceae), with special reference to three new synonyms. *Journal of Bryology* 37(2): 297–303. https://doi.org/10.1179/1743282015Y.0000000019
Shu, L., X.-J. Jin, and R.-L. Zhu. 2022. Novel classification and biogeography of *Leptolejeunea* (Lejeuneaceae, Marchantiophyta) with implications for the origin and evolution of the Asian evergreen broad-leaved forests. *Journal of Systematics and Evolution* 60(5): 1199–1217. https://doi.org/10.1111/jse.12798
Sierra, A. M., and G. Dauphin. 2016. Notes on the genus *Cololejeunea* (Lejeuneaceae) in Panama: *C. cingens* (new record) and *C. tamasii*. *Polish Botanical Journal* 61(2): 231–235. https://doi.org/10.1515/pbj-2016-0027
Sierra, A. M., A. Vanderpoorten, S. R. Gradstein, M. R. Pereira, C. J. P. Bastos, and C. E. Zartman. 2018a. Bryophytes of Jaú National Park (Amazonas, Brazil): Estimating species detectability and richness in a lowland Amazonian megareserve. *Bryologist* 121(4): 571–588. https://doi.org/10.1639/0007-2745-121.4.571
Sierra, A. M., J. Bechteler, D. Cardoso, C. Zartman, and J. C. Villarreal. 2018b. Divergence time analyses suggest a Miocene origin of the narrow Amazonian endemic rheophytic *Ceratolejeunea temnantha* (Spruce) Reiner-Drehwald (Porellales, Lejeuneaceae). *Bryophyte Diversity Evol.* 40(2): 55–67. https://doi.org/10.11646/bde.40.2.4
Sierra, A. M., J. J. Toledo, N. Salazar Allen, and C. E. Zartman. 2019a. Reproductive traits as predictors of assembly chronosequence patterns in epiphyllous bryophyte metacommunities. *Journal of Ecology* 107(2): 875–886. https://doi.org/10.1111/1365-2745.13058
Sierra, A. M., M. R. Pereira, and C. E. Zartman. 2019b. New records for the bryophyte flora of the Brazilian Amazon [Novos registros para as briófitas

da Amazonia brasileira]. *Rodriguésia* 70(e00192017): 1–9. https://doi.org/10.1590/2175-7860201970013

Sierra, A. M., C. J. P. Bastos, and C. E. Zartman. 2021. Two new species of *Ceratolejeunea* (Lejeuneaceae) and five noteworthy records for Brazil. *Bryophyte Diversity and Evolution* 44(1): 12–21. https://doi.org/10.11646/bde.44.1.2

Sillett, S. C., S. R. Gradstein, and D. Griffin. 1995. Bryophyte diversity of *Ficus* tree crowns from cloud forest and pasture in Costa Rica. *Bryologist* 98(2): 251–260. https://doi.org/10.2307/3243312

Silva, J. A. S., R. S. Fernandes, and D. P. Costa. 2018. Species diversity of the genus Riccia L. (Marchantiales, Ricciaceae) in Maranhão state, Brazil. *Checklist* 14(5): 763–769. https://doi.org/10.15560/14.5.763

Silva, J. P., R. Fúvio Oliveira-da-Silva, A. L. Ilkiu-Borges, and R. S. Fernandes. 2021. Leafy liverworts of Chapada das Mesas National Park: A floristic survey and checklist of the leafy liverworts of Maranhão state, Brazil. *Checklist* 17(1): 479–495. https://doi.org/10.15560/17.1.479

Sim-Sim, M., M. G. Esquivel, S. Fontinha, and S. Carvalho. 2004. *Plagiochila stricta* Lindenb. New to Madeira: Morphological and molecular evidence. *Nova Hedwigia* 79(3/4): 497–505. https://doi.org/10.1127/0029-5035/2004/0079-0497

Singh, D. K. 2002. *Notothylaceae of India and Nepal (a morpho-taxonomic revision)*. Bishen Singh Mahendra Pal Singh, Dehra Dun, 271 pp.

Singh, D. K., and R. C. Semwal. 2000. A new species of *Notothylas* Sull. (Bryophyta) from Uttaranchal, India. *Indian Journal of Forestry* 23(4): 386–389.

Singh, D. K., M. Dey, and D. Singh. 2016. *Liverworts and hornworts of India. An annotated checklist*. Botanical Survey of India, Calcutta, 439 pp.

Singh, S. K. 2013. New combinations in *Lejeunea* with a new name to *Otigoniolejeunea indica*. *Phytotaxa* 96(1): 63–64. https://doi.org/10.11646/phytotaxa.96.1.3

Smith, J. E., and J. Sowerby. 1800. *English botany*. Volume 10. J. Davis, London, pp. 649–720. https://doi.org/10.5962/bhl.title.11893

Smith, J. E., and J. Sowerby. 1806. *English botany*. Volume 23. J. Davis, London, pp. 1585–1656. https://doi.org/10.5962/bhl.title.11893

So, M. L. 2002. *Metzgeria* (Hepaticae) in Australasia and the Pacific. *New Zealand Journal of Botany* 40(4): 603–627. https://doi.org/10.1080/0028825X.2002.9512818

So, M. L. 2003. The genus *Metzgeria* (Hepaticae) in Asia. *Journal of the Hattori Botanical Laboratory* 94: 159–177. https://doi.org/10.18968/jhbl.94.0_159

So, M. L. 2005. *Porella* (Porellaceae, Marchantiophyta) in Latin America. *New Zealand Journal of Botany* 43(1): 301–321. https://doi.org/10.1080/0028825X.2005.9512956

So, M. L., and R. Grolle. 2003. *Syzygiella kerguelensis*, a new species of the subgenus *Pseudoplagiochila* (Jungermanniales) from Kerguelen. *Nova Hedwigia* 77(3/4): 357–362. https://doi.org/10.1127/0029-5035/2003/0077-0357

Söderström, L., and A. Hagborg. 2023a. Notes on Early Land Plants Today. 82. *Frullanoides chinantlana* (Gottsche) comb. nov., an older name for *Frullanoides tristis* (Steph.) van Slageren. *Lindbergia* 46(e24519): 1–2. https://doi.org/10.25227/linbg.24519

Söderström, L., and A. Hagborg. 2023b. Notes on Early Land Plants Today. 93. New synonyms in *Plagiochila*. *Lindbergia* 46(e25017): 1–2. https://doi.org/10.25227/linbg.25017

Söderström, L., and A. Hagborg. 2023c. Notes on Early Land Plants Today. 94. *Leptoscyphus orbignianus* comb. nov. *Lindbergia* 46(e25018): 1–2. https://doi.org/linbg.25018

Söderström, L., and J. Hentschel. 2023. Notes on Early Land Plants Today. 91. Types and original material of liverworts in Herbarium Haussknecht (JE) collected in Central America. *Lindbergia* 46(e25015): 1–27. https://doi.org/10.25227/linbg.25015

Söderström, L., A. Hagborg, M. von Konrat, and M. Renner. 2008. Early Land Plants Today: Liverwort checklist of checklists. *Fieldiana, Botany*, n.s., 47: 105–130. https://doi.org/10.3158/0015-0746-47.1.105

Söderström, L., A. Hagborg, M. R. Crosby, and M. J. von Konrat. 2012a. Early Land Plants Today: Index of Liverworts & Hornworts 2009–2010. *Phytotaxa* 63(1): 21–68. https://doi.org/10.11646/phytotaxa.63.1.2

Söderström, L., A. Hagborg, and M. J. von Konrat. 2012b. Notes on Early Land Plants Today. 1. A new name for *Cryptothallus hirsutus*. *Phytotaxa* 65: 43. https://doi.org/10.11646/phytotaxa.65.1.6

Söderström, L., B. J. Crandall-Stotler, R. E. Stotler, J. Váňa, A. Hagborg, and M. J. von Konrat. 2013a. Notes on Early Land Plants Today. 36. Generic treatment of Lophocoleaceae (Marchantiophyta). *Phytotaxa* 97(2): 36–43. https://doi.org/10.11646/phytotaxa.97.2.3

Söderström, L., J. Váňa, B. J. Crandall-Stotler, R. E. Stotler, A. Hagborg, and M. J. von Konrat. 2013b. Notes on Early Land Plants Today. 43. New combinations in Lophocoleaceae (Marchantiophyta). *Phytotaxa* 112(1): 18–32. https://doi.org/10.11646/phytotaxa.112.1.4

Söderström, L., J. Váňa, A. Hagborg, and M. J. von Konrat. 2013c. Notes on Early Land Plants Today. 31. *Lophonardia* replaces *Hypolophozia* (Cephaloziellaceae, Marchantiophyta). *Phytotaxa* 81(1): 19–21. https://doi.org/10.11646/phytotaxa.81.1.7

Söderström, L., A. Hagborg, and M. J. von Konrat. 2014. Early Land Plants Today: Index of liverworts & hornworts 2011–2012. *Phytotaxa* 170(2): 61–85. https://doi.org/10.11646/phytotaxa.170.2.1

Söderström, L., R. E. Stotler, S. R. Gradstein, F. R. Barrie, A. Hagborg, B. J. Crandall-Stotler, and M. J. von Konrat. 2015. Notes on Early Land Plants Today. 73. Genera of Lejeuneaceae established in the period 1884–1893: Dates of validation and implications. *Phytotaxa* 220(2): 143–198. https://doi.org/10.11646/phytotaxa.220.2.4

Söderström, L., A. Hagborg, M. von Konrat, S. E. Bartholomew-Began, D. Bell, L. Briscoe, E. A. Brown, D. C. Cargill, D. P. da Costa, B. J. Crandall-Stotler, E. D. Cooper, G. Dauphin, J. J. Engel, K. Feldberg, D. Glenny, S. R. Gradstein, X.-L. He, J. Heinrichs, J. Hentschel, A. L. Ilkiu-Borges, T. Katagiri, N. A. Konstantinova, J. Larraín, D. G. Long, M. Nebel, T. Pócs, F. Puche, M. E. Reiner-Drehwald, M. A. M. Renner, A. A. Gyarmati, A. Schäfer-Verwimp, J. G. Segarra-Moragues, R. E. Stotler, P. Sukkharak, B. M. Thiers, J. Uribe-Meléndez, J. Váňa, J. C. Villarreal A., M. J. Wigginton, L. Zhang, and R.-L. Zhu. 2016a. World checklist of hornworts and liverworts. *PhytoKeys* 59(1/2): 1–828. https://doi.org/10.3897/phytokeys.59.6261

Söderström, L., A. Hagborg, and M. J. von Konrat. 2016b. Early Land Plants Today: Index of Liverworts & Hornworts 2013–2014. *Phytotaxa* 269(3): 133–185. https://doi.org/10.11646/phytotaxa.269.3.1

Söderström, L., A. Hagborg, and M. J. von Konrat. 2020. Early Land Plants Today: Index of Liverwort and Hornwort names published 2017–2018. *Phytotaxa* 440(1): 1–24. https://doi.org/10.11646/phytotaxa.440.1.1

Söderström, L., A. Hagborg, and M. J. von Konrat. 2022a. Early Land Plants Today: Index of Liverwort and Hornwort names published 2019–2020. *Phytotaxa* 542(1): 1–23. https://doi.org/10.11646/phytotaxa.542.1.1

Söderström, L., A. Hagborg, and T. Pócs. 2022b. Proposal to reject the name *Aphanolejeunea angustissima* (*Lejeuneaceae*). *Taxon* 71(5): 1113. https://doi.org/10.1002/tax.12802

Söderström, L, M. von Konrat, and A. Hagborg. 2023a. Notes on Early Land Plants Today 90. Some technical lectotypifications in liverworts (Marchantiophyta) and hornworts (Anthocerotophyta). *Acta Biologica Plantarum Agriensis* 11: 149–159.

Söderström, L, A. Hagborg, J. Hentschel, J. Uribe, B. Cañiza, and M. von Konrat. 2023b. Notes on Early Land Plants Today. 81. Lectotypification of some names in *Frullania*. *Lindbergia* 46(e24518): 1–2. https://doi.org/10.25227/linbg.24518.

Solari, S. S. 1973. Miscelánea briológica (Hepaticae) I. *Boletín de la Sociedad Argentina de Botánica* 15(2/3): 197–203.

Sonnleitner, M., S. Dullinger, W. Wanek, and H. Zechmeister. 2009. Microclimatic patterns correlate with the distribution of epiphyllous bryophytes in a tropical lowland rain forest in Costa Rica. *Journal of Tropical Ecology* 25: 321–330. https://doi.org/10.1017/S0266467409006002

Spörle, J. 1990. *Phytochemische Untersuchungen an ausgewählten panamaischen Lebermoosen*. Universität des Saarlandes, Saarbrücken, 90 pp.

Spörle, J., H. Becker, M. P. Gupta, M. Veith, and V. Huch. 1989. Novel C-35 terpenoids from the Panamanian liverwort *Plagiochila moritziana*. *Tetrahedron* 45(16): 5003–5014. https://doi.org/10.1016/S0040-4020(01)81080-2

Spörle, J., H. Becker, N. Salazar Allen, and M. P. Gupta. 1991. Lipophilic constituents from the Panamanian liverwort *Monoclea gottschei* subsp. *neotropica*. *Journal of the Hattori Botanical Laboratory* 70: 151–155. https://doi.org/10.18968/jhbl.70.0_151

Sprengel. C. 1821. *Neue Entdeckungen im ganzen Umfang der Pflanzenkunde, Zweyter Band*. Friedrich Fleischer, Leipzig, Germany, 363 pp. https://www.biodiversitylibrary.org/item/50218#page/5/mode/1up

Sprengel. C. 1827a. *Systema vegetabilium. Editio decima sexta, voluminis IV, pars II*. Heinrichs Dieterich, Göttingen, 410 pp. https://doi.org/10.5962/bhl.title.822

Sprengel. C. 1827b. *Systema vegetabilium. Editio decima sexta, voluminis IV, pars I*. Heinrichs Dieterich, Göttingen, 592 pp. https://doi.org/10.5962/bhl.title.822

Spruce, R. 1844. The Musci and Hepaticae of Teesdale. *Annals and Magazine of Natural History* 13(83): 271–283. www.biodiversitylibrary.org/item/19482#page/293/mode/1up

Spruce, R. 1876a. On *Anomoclada*, a new genus of Hepaticae, and on its allied genera, *Odontoschisma* and *Adelanthus* (concluded). *Journal of Botany, British*

and Foreign 14: 230–235. https://www.biodiversitylibrary.org/item/36194#page/254/mode/1up

Spruce, R. 1876b. On *Anomoclada*, a new genus of Hepaticae, and on its allied genera, *Odontoschisma* and *Adelanthus* (cont.). *Journal of Botany, British and Foreign* 14(5): 193–203. https://www.biodiversitylibrary.org/item/36194#page/215/mode/1up

Spruce, R. 1876c. On *Anomoclada*, a new genus of Hepaticae, and on its allied genera, *Odontoschisma* and *Adelanthus*. *Journal of Botany, British and Foreign* 14: 129–136. https://www.biodiversitylibrary.org/item/36194#page/151/mode/1up

Spruce, R. 1881. Musci praeteriti. *Journal of Botany, British and Foreign* 19: 33–40. https://www.biodiversitylibrary.org/item/108320#page/40/mode/1up

Spruce, R. 1882. *On* Cephalozia. Slater, Malton, 99 pp. https://doi.org/10.5962/bhl.title.46289

Spruce, R. 1884. Hepaticae amazonicae et andinae. I. *Transactions and Proceedings of the Botanical Society of Edinburgh* 15(1): 1–308. https://www.biodiversitylibrary.org/item/87079#page/5/mode/1up

Spruce, R. 1885. Hepaticae amazonicae et andinae. II. *Transactions and Proceedings of the Botanical Society of Edinburgh* 15: 309–588. www.biodiversitylibrary.org/item/87079#page/5/mode/1up

Spruce, R. 1888. Hepaticae in prov. Rio de Janeiro a Glaziou lectae, a R. Spruce determinatae. *Revue Bryologie* 15(3): 33–34. www.biodiversitylibrary.org/item/10017#page/244/mode/1up

Spruce, R. 1889. Hepaticae novae americanae tropicae et aliae. *Bulletin de la Société Botanique de France (Sér. 2, Congrès de Botanique)* 36: clxxxix–ccvii. https://www.biodiversitylibrary.org/item/8658#page/647/mode/1up

Spruce, R. 1890. Hepaticae bolivianae, in Andibus boliviae orientalis. *Memoirs of the Torrey Botanical Club* 1(3): 113–140. www.biodiversitylibrary.org/item/98771#page/123/mode/1up

Srivastava, S. C. 1998. Distribution of Hepaticae and Anthocerotae in India. In *Topics in bryology*, ed. R. N. Chopra, pp. 53–85. Allied Press, New Delhi.

Srivastava, S. C., and D. Sharma. 2000. A preliminary study on the liverwort and hornwort flora of Silent Valley (Kerala). In *Prof. D.D. Nautiyal commemoration volume: Recent trends in botanical researches*, ed. D. K. Chauhan, pp. 55–75. University of Allahabad, Allahabad, India.

Stafleu, F. A., and R. Cowan. 1985. *Taxonomic literature*. 2nd ed. Bohn, Scheltema & Holkema, Utrecht/Antwerpen & W. Junk, Boston.

Standley, P. C. 1931. Flora of the Lancetilla Valley, Honduras. *Field Museum of Natural History, Botanical Series* 10: 1–418. https://www.biodiversitylibrary.org/item/19802#page/9/mode/1up

Standley, P. C., and S. Calderón. 1925. *Flora Salvadorena. Lista preliminar de las plantas de El Salvador.* La Union, Dutriz Hermanos, San Salvador, 450 pp.

Stech, M., S. Osman, M. Sim-Sim, and W. Frey. 2006. Molecular systematics and biogeography of the liverwort genus *Tylimanthus* (Acrobolbaceae). Studies in austral temperate rain forest bryophytes 33. *Nova Hedwigia* 83(1/2): 17–30. https://doi.org/10.5962/bhl.title.46289

Steere, W. C. 1946. The bryophyta of the Allan Hancock Expedition of 1939. *Allan Hancock Pacific Expeditions* 13(1): 1–4. https://www.biodiversitylibrary.org/item/34423#page/13/mode/1up

Steere, W. C., and H. Inoue. 1978. The Hepaticae of arctic Alaska. *Journal of the Hattori Botanical Laboratory* 44: 251–345.

Ştefănuţ, S. 2003. *Pallavicinia lyellii*, a new species from Romania. *Acta Horti Botanici Bucurestiensis* 30: 71–78. https://ahbb.unibuc.ro/wp-content/uploads/2020/01/AHBB-30-Page-73-80.pdf

Stephani, F. 1884a. Die Gattung *Radula* (Fortsetzung). *Hedwigia* 23(10): 145–159. https://www.biodiversitylibrary.org/item/13868#page/155/mode/1up

Stephani, F. 1884b. Die Gattung *Radula*. *Hedwigia* 23(8): 113–116. https://www.biodiversitylibrary.org/item/13868#page/122/mode/1up

Stephani, F. 1884c. Die Gattung *Radula* (Fortsetzung). *Hedwigia* 23(9): 129–137. https://www.biodiversitylibrary.org/item/13868#page/138/mode/1up

Stephani, F. 1885a. Hepaticarum species novae vel minus cognitae 2. *Hedwigia* 24(4): 166–168. https://www.biodiversitylibrary.org/item/13869#page/177/mode/1up

Stephani, F. 1885b. Hepaticarum species novae vel minus cognitae. IV. *Hedwigia* 24(6): 246–250. https://www.biodiversitylibrary.org/item/13869#page/261/mode/1up

Stephani, F. 1886a. Hepaticae africanae. *Botanische Jahrbücher* für *Systematik, Pflanzengeschichte und Pflanzengeographie* 8(2): 79–95. https://www.biodiversitylibrary.org/item/667#page/86/mode/1up

Stephani, F. 1886b. Hepaticarum species novae vel minus cognitae VIII. *Hedwigia* 25(6): 233–249. https://www.biodiversitylibrary.org/item/13869#page/551/mode/1up

Stephani, F. 1886c. Hepaticarum species novae vel minus cognitae. VI. *Hedwigia* 25(4): 133–134. https://www.biodiversitylibrary.org/item/13869#page/444/mode/1up

Stephani, F. 1886d. Hepaticarum species novae vel minus cognitae. VII. *Hedwigia* 25(5): 202–208. https://www.biodiversitylibrary.org/item/13869#page/517/mode/1up

Stephani, F. 1888a. Westindische Hepaticae I. Hepaticae portoricenses. *Hedwigia* 27(11/12): 276–299. www.biodiversitylibrary.org/item/13870#page/544/mode/1up

Stephani, F. 1888b. Westindische Hepaticae II. Hepaticae ex insulis St. Domingo et Dominica, quas collegit Eggers. *Hedwigia* 27(11/12): 299–302. https://www.biodiversitylibrary.org/item/13870#page/567/mode/1up

Stephani, F. 1888c. Hepaticae africanae. *Hedwigia* 27(2): 59–63. https://www.biodiversitylibrary.org/item/13870#page/317/mode/1up

Stephani, F. 1888d. Hepaticae africanae. *Hedwigia* 27(3/4): 106–113. https://www.biodiversitylibrary.org/item/13870#page/369/mode/1up

Stephani, F. 1889. Hepaticae australiae 1. *Hedwigia* 28(2): 128–135. https://www.biodiversitylibrary.org/item/13871#page/157/mode/1up

Stephani, F. 1890a. Die Gattung *Lejeunea* im Herbarium Lindenberg (Schluss). *Hedwigia* 29(3): 133–142. https://www.biodiversitylibrary.org/item/13872#page/162/mode/1up

Stephani, F. 1890b. Die Gattung *Lejeunea* im Herbarium Lindenberg. *Hedwigia* 29(1): 1–23. https://www.biodiversitylibrary.org/item/13872#page/29/mode/1up

Stephani, F. 1890c. Die Gattung *Lejeunea* im Herbarium Lindenberg (Fortsetzung). *Hedwigia* 29(2): 68–99. https://www.biodiversitylibrary.org/item/13872#page/96/mode/1up

Stephani, F. 1890d. Hepaticae africanae novae in insulis Bourbon, Maurice et Madagascar lectae. *Botanical Gazette* 15(11): 281–292. https://doi.org/10.1086/326585

Stephani, F. 1891a. Hepaticae africanae. *Hedwigia* 30(5): 201–217. https://www.biodiversitylibrary.org/item/13873#page/243/mode/1up

Stephani, F. 1891b. Hepaticae africanae. *Hedwigia* 30(6): 265–272. https://www.biodiversitylibrary.org/item/13873#page/311/mode/1up

Stephani, F. 1892. The North American Lejeuneae. *Botanical Gazette* 17(6): 170–173. https://www.biodiversitylibrary.org/item/92733#page/199/mode/1up

Stephani, F. 1893a. Hepaticarum species novae IV. *Hedwigia* 32(5): 315–327. https://www.biodiversitylibrary.org/item/13875#page/364/mode/1up

Stephani, F. 1893b. Hepaticarum species novae III. *Hedwigia* 32(4): 204–214. https://www.biodiversitylibrary.org/item/13875#page/248/mode/1up

Stephani, F. 1893c. Hepaticae. In *Primitiae florae costaricensis,* Volume 1, Fasc. 2, ed. T. Durand and H. F. Pittier, pp. 175–182. Jardin Botanique de l'État, Meise. https://doi.org/10.5962/bhl.title.51686

Stephani, F. 1893d. Hepaticarum species novae II. *Hedwigia* 32(3): 137–147. https://www.biodiversitylibrary.org/item/13875#page/180/mode/1up

Stephani, F. 1894a. Hepaticae (in *Cryptogamae Centrali-Americanae in Guatemala, Costa-Rica, Columbia & Ecuador cl. f. Lehmann lectae*). *Bulletin de l'Herbier Boissier* 2(6): 402–403. https://www.biodiversitylibrary.org/item/105264#page/434/mode/1up

Stephani, F. 1894b. Hepaticarum species novae VI. *Hedwigia* 33(3): 137–169. https://www.biodiversitylibrary.org/item/13876#page/185/mode/1up

Stephani, F. 1895a. Hepaticarum species novae VII. *Hedwigia* 34(2): 43–65. https://www.biodiversitylibrary.org/item/13877#page/82/mode/1up

Stephani, F. 1895b. Hepaticae. In *Die Pflanzenwelt Ost-Afrikas und der Nachbargebiete. Theil C. Verzeichniss der bis jetzt aus Ost-Afrika bekannt gewordenen Pflanzen*, ed. A. Engler, pp. 62–66. Dietrich Reimer Verlag, Berlin. https://doi.org/10.5962/bhl.title.587

Stephani, F. 1895c. Hepaticarum species novae VIII. *Hedwigia* 34(5): 232–253. https://www.biodiversitylibrary.org/item/13877#page/281/mode/1up

Stephani, F. 1896. Hepaticarum species novae IX. *Hedwigia* 35(3): 73–140. https://www.biodiversitylibrary.org/item/13878#page/110/mode/1up

Stephani, F. 1897a. Hepaticae sandvicenses. *Bulletin de l'Herbier Boissier* 5(10): 840–849. https://www.biodiversitylibrary.org/item/105007#page/888/mode/1up

Stephani, F. 1897b. Hepaticae japonicae. *Bulletin de l'Herbier Boissier* 5(2): 76–108. https://www.biodiversitylibrary.org/item/105007#page/92/mode/1up

Stephani, F. 1897c. Die Lebermoose der ersten Regnell'schen expedition nach Südamerika. *Bihang till Kongliga Svenska Vetenskaps-Akademiens Handlingar* 23(III, 2): 1–36. https://www.biodiversitylibrary.org/item/47819#page/33/mode/1up

Stephani, F. 1898a. Species hepaticarum: eine Darstellung ihrer Morphologie und Beschreibung ihrer Gattungen wie aller bekannten Arten in Monographien unter Berücksichtigung ihrer gegenseitigen Verwandtschaft und geographischen Verbreitung, vol. 1. *Bulletin de l'Herbier Boissier* 6(4): 309–343. https://doi.org/10.5962/bhl.title.95494

Stephani, F. 1898b. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 6(10): 757–799. https://doi.org/10.5962/bhl.title.95494

Stephani, F. 1899a. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 7(3): 198–225. https://doi.org/10.5962/bhl.title.95494

Stephani, F. 1899b. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 7(12): 927–956. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1899c. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 7(9): 655–695. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1899d. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 7(5): 381–407. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1899e. Species hepaticarum 1. *Bulletin de l'Herbier Boissier* 7(10): 727–764. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1900a. Species hepaticarum 1. *Mémoires de l'Herbier Boissier* 16: 1–46. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1900b. Species hepaticarum 1. *Mémoires de l'Herbier Boissier* 11: 1–49. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1900c. Beiträge zur Lebermoosflora Westpatagoniens und des südlichen Chiles. *Bihang till Kongliga Svenska Vetenskaps-Akademiens Handlingar* 26(III, 6): 1–69. https://www.biodiversitylibrary.org/item/47802#page/351/mode/1up
Stephani, F. 1901a. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 1(11): 1121–1151. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1901b. Hepaticae novae Dussianae. In *Symbolae antillanae*, ed. I. Urban, pp. 469–472. Bornträger, Leipzig, Germany. https://doi.org/10.5962/bhl.title.144
Stephani, F. 1901c. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 1(2): 140–177. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1901d. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 1(10): 1022–1040. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1901e. Hepaticae (in N. E. Brown, *Reports on two botanical collections made by Messrs, F. V. McConnell & J. J. Quelch at Mount Roraima in British Guiana*). *Transactions of the Linnean Society of London, Botany* 6(1): 93–100. https://www.biodiversitylibrary.org/item/13687#page/97/mode/1up
Stephani, F. 1901f. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 1(5): 477–521. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1902a. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 2(10): 857–888. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1902b. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 2(8): 657–688. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1902c. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 2(2): 157–179. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1902d. Hepaticae novae dussianae II. In *Symbolae antillanae,* Volume 3, ed. I. Urban, pp. 275–279. Bornträger, Leipzig, Germany. https://doi.org/10.5962/bhl.title.144
Stephani, F. 1902e. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 2(5): 454–474. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1904. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 4(12): 1197–1214. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905a. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 5(2): 175–190. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905b. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 5(12): 1129–1144. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905c. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 5(10): 917–946. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905d. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 5(9): 885–900. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905e. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 5(4): 351–366. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1905f. Species hepaticarum 2. *Bulletin de l'Herbier Boissier*, sér. 2, 5(8): 736–751. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1906a. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 6(3): 217–232. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1906b. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 6(5): 377–392. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1907a. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 7(4): 297–312. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1907b. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 7(1): 59–72. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908a. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(7): 483–514. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908b. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(8): 561–608. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908c. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(1): 49–64. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908d. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(10): 745–776. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908e. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(2): 125–148. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908f. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(4): 267–282. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908g. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(9): 661–696. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1908h. Species hepaticarum 3. *Bulletin de l'Herbier Boissier*, sér. 2, 8(11): 837–866. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1909a. *Species hepaticarum 4*. George & Cie, Genève & Bale, pp. 1–96. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1909b. *Species hepaticarum 3*. George & Cie, Genève & Bale, pp. 517–693. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1910a. *Species hepaticarum 4*. George & Cie, Genève & Bale, pp. 97–448. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1910b. Hepaticae (in K. H. Rechinger, *Botanische und zoologische Ergebnisse einer wissenschaftlichen Forschungsreise nach den Samoainseln*). *Denkschriften der Akademie der Wissenschaften in Wien. Mathematisch-Naturwissenschaftliche Klasse* 85: 193–201. https://www.biodiversitylibrary.org/item/110762#page/229/mode/1up
Stephani, F. 1911a. Botanische Ergebnisse der schwedischen Expedition nach Patagonien und dem Feuerlande 1907–1909. II. Die Lebermoose. *Kungliga Svenska Vetenskapsakademiens Handlingar*, n.s., 46(9): 1–92. https://www.biodiversitylibrary.org/item/130977#page/439/mode/1up
Stephani, F. 1911b. *Species hepaticarum 4*. George & Cie, Genève & Bale, pp. 449–736. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1912a. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 1–176. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1912b. *Species hepaticarum 4*. George & Cie, Genève & Bale, pp. 737–824. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1913. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 177–448. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1914. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 449–704. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1915. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 705–832. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1916a. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 833–1008. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1916b. Hepaticae (in T. Herzog, *Die Bryophyten meiner zweiten Reise durch Bolivia*). *Bibliotheca Botanica* 21(87): 173–268. https://www.biodiversitylibrary.org/item/181426#page/70/mode/1up
Stephani, F. 1917a. *Species hepaticarum 5*. George & Cie, Genève & Bale, pp. 1009–1044. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1917b. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 1–128. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1918. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 129–176. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1921. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 177–240. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1922. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 241–368. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1923. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 369–432. https://doi.org/10.5962/bhl.title.95494
Stephani, F. 1924. *Species hepaticarum 6*. George & Cie, Genève & Bale, pp. 433–654. https://doi.org/10.5962/bhl.title.95494
Steyermark, J., and C. Brewer-Carías. 1976. La vegetación de la cima del Macizo de Jaua. *Boletín de la Sociedad Venezolana de Ciencias Naturales* 32(132/133): 179–405.
Stotler, R. E. 1969. The genus *Frullania* subgenus *Frullania* in Latin America. *Nova Hedwigia* 18: 397–555.
Stotler, R. E., and B. J. Crandall-Stotler. 1974. A monograph of the genus *Bryopteris*. *Bryophytorum Bibliotheca* 3: 1–159.
Stotler, R. E., and B. J. Crandall-Stotler. 2017. A synopsis of the liverwort flora of North America north of Mexico. *Annals of the Missouri Botanical Garden* 102(4): 574–709. https://doi.org/10.3417/2016027
Stotler, R. E., N. Salazar Allen, S. R. Gradstein, W. McGuinness, A. Whittemore, and C. C. Chung. 1998. A checklist of the hepatics and anthocerotes of Panamá. *Tropical Bryology* 15: 167–195. https://doi.org/10.11646/bde.15.1.14
Strassburg, B. B. N., A. Iribarrem, A., H. L. Beyer, C. L. Codeiro, R. Crouzeilles, C. C. Jakovac, A. B. Junqueira, E. Lacerda, A. E. Latawiec, A. Balmford, T. M. Brooks, S. H. M. Butchart, R. L. Chazdon, K.-H. Erb, P. Brancalion, G. Buchanan, D. Cooper, S. Díaz, P. F. Donald, V. Kapos, D. Leclèrc, L. Miles, M. Obersteiner, C. Plutzar, C. A. de M. Scaramuzza, F. R. Scarano, and

P. Visconti. 2020. Global priority areas for ecosystem restoration. *Nature* 586, 724–729. https://doi.org/10.1038/s41586-020-2784-9

Sukkharak, P. 2011. *Taxonomy and phylogeny of the liverwort genus* Thysananthus *(Marchantiophyta: Lejeuneaceae)*. Georg-August Universität, Göttingen, 189 pp.

Sukkharak, P. 2015. A systematic monograph of the genus *Thysananthus* (Lejeuneaceae, Marchantiophyta). *Phytotaxa* 193(1): 1–81. https://doi.org/10.11646/phytotaxa.193.1.1

Sukkharak, P., and S. R. Gradstein. 2017. Phylogenetic study of *Mastigolejeunea* (Marchantiophyta: Lejeuneaceae) and an amended circumscription of the genus *Thysananthus*. *Phytotaxa* 326(2): 91–107. https://doi.org/10.11646/phytotaxa.326.2.1

Svihla, R. D. 1939. Field notes on a collection of Louisiana Hepaticae. *Bryologist* 42(5): 118–120. https://doi.org/10.2307/3239828

Svihla, R. D. 1940. An extension of the range of *Marchantia paleacea* Bertol. *Bryologist* 43(6): 167–168. https://doi.org/10.2307/3239428

Svihla, R. D. 1941. The status of *Marchantia domingensis*. *Bryologist* 44(2): 46–48. https://doi.org/10.2307/3239521

Svihla, R. D. 1942. Some Marchantiales from Mexico, Costa Rica and Panama. *Bryologist* 45(5): 135–137. https://doi.org/10.2307/3239086

Swails, L. F. 1970. The genus *Porella* in Latin America. *Nova Hedwigia* 19: 201–291.

Swartz, O. 1788. *Nova genera et species plantarum prodromus*. Bibliopolio. I. G. Mülleriano, Leipzig, Germany. https://doi.org/10.5962/bhl.title.4400

Swartz, O. 1806. *Flora indiae occidentalis, tomus 3*. J. Palm, Erlangae, pp. 1231–2018. https://doi.org/10.5962/bhl.title.434

Sydow, P. 1894. Moose. *Just's botanischer Jahresbericht* 19: 223–249. https://www.biodiversitylibrary.org/item/18854#page/235/mode/1up

Tan, B. C., and T. Pócs. 2000. *Bryogeography and conservation of bryophytes*. In *Bryophyte Biology*, ed. A. J. Shaw and B. Goffinet, pp. 403–448. Cambridge University Press, Cambridge, U.K.

Taylor, T. 1836. De Marchantieis. *Transactions of the Linnean Society of London* 17(3): 375–395. https://doi.org/10.1111/j.1095-8339.1834.tb00030.x

Taylor, T. 1844. On two new species of *Jungermannia*, and another new to Britain. *Transactions of the Botanical Society of Edinburgh* 1: 179–181. https://doi.org/10.1080/03746604409467527

Taylor, T. 1846a. New Hepaticae. *London Journal of Botany* 5: 365–417. https://www.biodiversitylibrary.org/item/6316#page/370/mode/1up

Taylor, T. 1846b. New Hepaticae. *London Journal of Botany* 5: 258–284. https://www.biodiversitylibrary.org/item/6316#page/263/mode/1up

Taylor, T. 1847. Descriptions of new Musci and Hepaticae, collected by Professor William Jameson on Pichincha, near Quito. *London Journal of Botany* 6: 328–342. https://www.biodiversitylibrary.org/item/6317#page/330/mode/1up

Taylor, T. 1848. On some new musci, collected by professor W. Jameson on Pichincha. *London Journal of Botany* 7: 187–199. https://www.biodiversitylibrary.org/item/6318#page/190/mode/1up

Taylor, J. 1960. *The genus* Lepidozia *in Latin America; a taxonomic monograph*. University of Cincinnati, Cincinnati, 207 pp.

Teeuwen, M. 1989. A revision of the genus *Odontolejeunea* (Spruce) Schiffn. (Lejeuneaceae: Hepaticae). *Nova Hedwigia* 48(1/2): 1–32.

Thiers, B. M. 1982. Type studies in the Lejeuneaceae I. *Archilejeunea pabstii, Hygrolejeunea pacifica* and *Hygrolejeunea spongia*. *Brittonia* 34(3): 294–298. https://doi.org/10.2307/2806701

Thiers, B. M. 1985. Branching in Lejeuneaceae III. Ptychanthoideae. *Beiheft zur Nova Hedwigia* 80: 31–61.

Thiers, B. M. 1986. Branching in Lejeuneaceae (Hepaticae) IV. Lejeuneoideae. *Nova Hedwigia* 42(2/4): 237–275.

Thiers, B. M. 1993. A monograph of *Pleurozia* (Hepaticae, Pleuroziaceae). *Bryologist* 96(4): 517–554. https://doi.org/10.2307/3243984

Thunberg, C. P. 1800. *Prodromus plantarum capensium, pars posterior.* Joh. Edman, Upsaliae [Uppsala], pp. 85–191. https://doi.org/10.5962/bhl.title.84

Timme, S. L. 1985. Bryophyte floristic and ecological studies of the Amazon River Basin, Department of Loreto, Peru. Ph.D. diss., Mississippi State University, Mississippi State, 280 pp.

Tixier, P. 1980. Contribution à l'étude du genre *Cololejeunea* (Lejeuneaceae) IX. Espèces nouvelles du sous genre *Pedinolejeunea* (Ben.) Mizutani en région néotropicale. *Bradea* 3(6): 35–44.

Tixier, P. 1985. Contribution à la connaissance des Cololejeuneoideae. *Bryophytorum Bibliotheca* 27: 1–439.

Tixier, P. 1991. Bryophyta exotica – 9. Quelques Lejeuneaceae (Hépatiques) nouvelles pour l'Amerique du Sud. *Candollea* 46(2): 267–302. https://www.e-periodica.ch/digbib/view?pid=can-002%3A1991%3A46%3A%3A254#282

Tixier, P. 1995. Rectifications nomenclaturales – Typifications. *Cryptogamie, Bryologie, Lichénologie* 16(3): 229–230. https://www.biodiversitylibrary.org/item/291564#page/77/mode/1up

Tonduz, A. 1895a. Herborisations au Costa Rica. *Bulletin de l'Herbier Boissier* 3(1): 1–12. https://www.biodiversitylibrary.org/item/105924#page/13/mode/1up

Tonduz, A. 1895b. Herborisations au Costa-Rica. II. Dans la vallée de Reventazon. *Bulletin de l'Herbier Boissier* 3(9): 445–465. https://www.biodiversitylibrary.org/item/105924#page/489/mode/1up

Tonduz, A. 1896. Herborisations au Costa Rica III. *Bulletin de l'Herbier Boissier* 4(3): 163–177. https://www.biodiversitylibrary.org/item/104951#page/185/mode/1up

Tosi, J. A. 1969. *Mapa ecológico, República de Costa Rica, según la clasificación de zonas de vida del mundo de L. R. Holdridge*. San José, Centro Científico Tropical.

Trevisan, V. B. A. 1874. Nuova censo delle epatiche italiane. *Rendiconti dell Reale Istituto Lombardo di Scienze e Lettere*, ser. 2, 7: 776–786.

Trevisan, V. B. A. 1877. Schema di una nuova classificazione delle Epatiche. *Memorie del Reale Istituto Lombardo de Scienze e Lettere, Serie 3, Classe di Scienze Matematiche e Naturali* 4(13): 383–451. https://books.google.no/books?id=xioWAAAAYAAJ&redir_esc=y

Turland, N. J., J. H. Wiersema, F. R. Barrie, W. Greuter, D. L. Hawksworth, P. S. Herendeen, S. Knapp, W.-H. Kusber, D.-Z. Li, K. Marhold, T. W. May, J. McNeill, A. M. Monro, J. Prado, M. J. Price, and G. F. Smith, eds. 2018. *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code) Adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile, Vol. 159. Koeltz Botanical Books, Glashütten, Germany. https://doi.org/10.12705/Code.2018

Udar, R., and D. K. Singh. 1979. *Notothylas dissecta*, a hornwort new to India. *Bryologist* 82(4): 625–628. https://doi.org/10.2307/3242010

Umana N. H.-N., and W. Wanek. 2010. Large canopy exchange fluxes of inorganic and organic nitrogen and preferential retention of nitrogen by epiphytes in a tropical lowland rainforest. *Ecosystems* 13: 367–381. https://doi.org/10.1007/s10021-010-9324-7

Underwood, L. M. 1884. Descriptive catalogue of the North American Hepaticae, north of Mexico. *Bulletin of the Illinois State Laboratory of Natural History* 2(1): 1–133. https://www.biodiversitylibrary.org/item/35002#page/19/mode/1up

Underwood, L. M. 1888. Some undescribed Hepaticae from California. *Botanical Gazette* 13(5): 112–114. https://doi.org/10.1086/326267

Underwood, L. M. 1895. Notes on our Hepaticae III. The distribution of North American Marchantiaceae. *Botanical Gazette* 20(2): 59–71. https://doi.org/10.1086/327151

United Nations Environment Programme. 2023. *Decades of mangrove forest change: what does it mean for nature, people and the climate?* UNEP, Nairobi. https://wedocs.unep.org/20.500.11822/42254

Uribe, J. 2005. *Monografía del subgénero* Meteoriopsis *del género* Frullania *(Jubulaceae, Hepaticae)*. Universidad Nacional de Colombia, Bogotá, 132 pp.

Uribe, J. 2008. Monografía de *Frullania* subgénero *Meteoriopsis* (Frullaniaceae, Marchantiophyta). *Caldasia* 30(1): 49–94. http://www.scielo.org.co/pdf/cal/v30n1/v30n1a3.pdf

Uribe, J., and J. Aguirre. 1995. Las especies colombianas del género *Symphyogyna* (Hepaticae: Pallaviciniaceae). *Caldasia* 17(82–85): 429–457. https://www.jstor.org/stable/45405381

Uribe, J., and S. R. Gradstein. 1998. Catalogue of the Hepaticae and Anthocerotae of Colombia. *Bryophytorum Bibliotheca* 53: 1–99.

Uribe, J., and S. R. Gradstein. 2003. Type studies on *Frullania* subgenus *Meteoriopsis* (Hepaticae). I. The lectotypification of the genus *Frullania, F.* subgen. *Thyopsiella* and *F.* subgen. *Meteoriopsis*, and some species transferred from subgen. *Meteoriopsis* to subgen. *Thyopsiella*. *Cryptogamie, Bryologie* 24(3): 193–207. https://sciencepress.mnhn.fr/en/periodiques/bryologie/24/3/type-studies-frullania-subgenus-meteoriopsis-hepaticae-i-lectotypification-genus-frullania-f-subgen-thyopsiella-and-f-subgen-meteoriopsis-and-some-species-transferred-subgen-meteoriopsis-subgen-thyopsiella

Valente, E. B. 2010. *Diversidade de Briófitas na Chapada Diamantina, Bahia, Brasil*. Universidade Federal de Pernambuco, Recife, 192 pp. https://repositorio.ufpe.br/bitstream/123456789/447/1/arquivo3581_1.pdf

Valente, E. B., K. C. Pôrto, C. J. P. Bastos, and J. Ballejos-Loyola. 2013. Diversity and distribution of the bryophyte flora in montane forests in the Chapada Diamantina region of Brazil. *Acta Botanica Brasilica* 27(3): 506–518. https://doi.org/10.1590/S0102-33062013000300008

Valero, A., J. Schipper, and T. Allnutt. 2018. Chiapas Depression dry forests. https://www.worldwildlife.org/ecoregions/nt0211 (accessed 3 March 2023).

Váňa, J. 1970. *Kymatocalyx* in Mittelamerika. Österreichische *Botanische Zeitschrift* 118(5): 572–579. https://doi.org/10.1007/BF01376264
Váňa, J. 1974a. Studien über die Jungermannioideae (Hepaticae). 6. *Jungermannia* subg. *Solenostoma*: Europäische und nordamerikanische Arten. *Folia Geobotanica et Phytotaxonomica* 9(4): 369–423. https://doi.org/10.1007/BF02852451
Váňa, J. 1974b. Studien über die Jungermannioideae (Hepaticae). 4. *Jungermannia* subg. *Plectocolea* und subg. *Solenostoma*: Allgemeines, süd- und mittelamerikanische Arten. *Folia Geobotanica et Phytotaxonomica* 9(2): 179–208. https://doi.org/10.1007/BF02852200
Váňa, J. 1976. Drei neue Gymnomitriaceen aus Südamerika. *Journal of the Hattori Botanical Laboratory* 41: 411–417.
Váňa, J. 1980. Some new South and Central American hepatics. *Journal of the Hattori Botanical Laboratory* 48: 225–234.
Váňa, J. 1984. *Anastrophyllum* (Spruce) Steph. In Latin America - preliminary information. In *Proceedings of the Third Meeting of the Bryologists from Central and East Europe*, ed. J. Váňa, pp. 99–106. Charles University, Prague.
Váňa, J. 1988. *Cephalozia* (Dum.) Dum. In Africa, with notes on the genus (Notes on some African hepatic genera 10). *Beiheft zur Nova Hedwigia* 90: 179–198.
Váňa, J. 1991. The bryophytes of Sabah (North Borneo) with special reference to the BRYOTROP transect of Mt. Kinabalu. XV. Lophoziaceae (Hepaticae). *Willdenowia* 20: 199–219. https://www.jstor.org/stable/3996740
Váňa, J. 1999. Phytogeography of the Jungermanniineae. *Bryobrothera* 5: 253–267.
Váňa, J. 2003. Notes on Gymnomitriaceae (subf. Gymnomitrioidae) in Latin America. *Acta Academiae Paedagogicae Agriensis, Sectio Biologiae*. 24: 109–128.
Váňa, J., and J. J. Engel. 2013. The liverworts and hornworts of the Tristan da Cunha group of islands in the south Atlantic Ocean. *Memoirs of the New York Botanical Garden* 105: 1–138.
Váňa, J., and N. Gremmen. 2005. Hepatics of Heard Island. *Cryptogamie, Bryologie* 26(1): 79–90. https://sciencepress.mnhn.fr/en/periodiques/bryologie/26/1/hepatics-heard-island
Váňa, J., and S. Piippo. 1989. Bryophyte flora of the Huon Peninsula, Papua New Guinea. XXXI. Cephaloziaceae subfam. Allobielloideae, Cephaloziellaceae, Antheliaceae and Lophoziaceae (Hepaticae). *Annales Botanici Fennici* 26(3): 263–290.
Váňa, J., and M. C. Watling. 2004a. Bryophyte flora of Uganda. 1. Jungermanniaceae. *Journal of Bryology* 26(2): 147–151. https://doi.org/10.1179/037366804225021209
Váňa, J., and M. C. Watling. 2004b. Bryophyte flora of Uganda. 2. Gymnomitriaceae. *Journal of Bryology* 26(3): 199–202. https://doi.org/10.1179/037366804X5297
Váňa, J., and M. C. Watling. 2004c. Bryophyte flora of Uganda. 3. Lophoziaceae. *Journal of Bryology* 26(4): 293–299. https://doi.org/10.1179/174328204X19487
Váňa, J., J. Hentschel, and J. Heinrichs. 2010a. New combinations in Jungermanniales: Transfer of 32 taxa to *Solenostoma* Mitt. *Cryptogamie, Bryologie* 31(2): 135–139. https://sciencepress.mnhn.fr/en/periodiques/bryologie/31/2/new-combinations-jungermanniales-transfer-32-taxa-solenostoma-mitt
Váňa, J., L. Söderström, A. Hagborg, and M. Von Konrat. 2010b. Nomenclatural novelties and lectotypifications in Gymnomitriaceae. *Novon* 20(2): 225–227. https://doi.org/10.3417/2009082
Váňa, J., R. Grolle, and D. G. Long. 2012a. Taxonomic realignments and new records of *Gongylanthus* and *Southbya* (Marchantiophyta: Southbyaceae) from the Sino-Himalayan region. *Nova Hedwigia* 95(1/2): 183–196. https://doi.org/10.1127/0029-5035/2012/0042
Váňa, J., L. Söderström, A. Hagborg, and M. J. von Konrat. 2012b. Notes on Early Land Plants Today. 8. New combinations and some lectotypifications in *Mesoptychia*. *Phytotaxa* 65: 52–56. https://doi.org/10.11646/phytotaxa.65.1.13
Váňa, J., L. Söderström, A. Hagborg, and M. J. von Konrat. 2013a. Notes on Early Land Plants Today. 44. Comments on sexuality in *Solenostoma* (Solenostomataceae, Marchantiophyta) and on some newly described taxa. *Phytotaxa* 152(1): 33–47. https://doi.org/10.11646/phytotaxa.152.1.3
Váňa, J., L. Söderström, A. Hagborg, and M. J. von Konrat. 2013b. Notes on Early Land Plants Today. 41. New combinations and new synonyms in Cephaloziaceae (Marchantiophyta). *Phytotaxa* 112(1): 7–15. https://doi.org/10.11646/phytotaxa.112.1.2
Váňa, J., L. Söderström, A. Hagborg, and M. J. von Konrat. 2014a. Notes on Early Land Plants Today. 52. Validation of *Tritomaria camerunensis* (Lophoziaceae, Marchantiophyta). *Phytotaxa* 167(2): 215–216. https://doi.org/10.11646/phytotaxa.167.2.11
Váňa, J., K. Feldberg, J. Heinrichs, L. Söderström, A. Hagborg, and M. J. von Konrat. 2014b. Notes on Early Land Plants Today. 55. New taxa and synonyms in Adelanthaceae (Marchantiophyta). *Phytotaxa* 173(1): 80–86. https://doi.org/10.11646/phytotaxa.173.1.7
Váňa, J., R. Ochyra, M. Lebouvier, and B. Cykowska-Marzencka. 2014c. Bryophytes of Île Amsterdam in the South Indian Ocean: 1. Liverworts. *Cryptogamie, Bryologie* 35(4): 335–371. https://doi.org/10.7872/cryb.v35.iss4.2014.335
Váňa, J., J. Bechteler, A. Schäfer-Verwimp, M. A. M. Renner, and J. Heinrichs. 2017. Integrative taxonomy substantiates the presence of three *Radula* species in Austria: *Radula complanata, R. lindenbergiana*, and *R. visianica* (Porellales, Jungermanniopsida). *Cryptogamie, Bryologie* 38(2): 125–135. https://doi.org/10.7872/cryb/v38.iss2.2017.125
Vanden Berghen, C. 1952. Notes sur quelques Lejeunéacées de l'Afrique continentale. *Bulletin du Jardin Botanique de l'*État, *Bruxelles* 22(1/2): 165–174. https://doi.org/10.2307/3666660
Vanderpoorten, A., and D. G. Long. 2006. Budding speciation and neotropical origin of the Azorean endemic liverwort, *Leptoscyphus azoricus*. *Molecular Phylogenetics and Evolution* 40(1): 73–83. https://doi.org/10.1016/j.ympev.2006.02.013
Vanderpoorten, A., A. Schäfer-Verwimp, J. Heinrichs, N. Devos, and D. G. Long. 2010. The taxonomy of the leafy liverwort genus *Leptoscyphus* (Lophocoleaceae) revisited. *Taxon* 59(1): 176–186. https://doi.org/10.1002/tax.591017
Van Dunné, H. J. F., and M. Kappelle. 1998. Biomass-diversity relations of epiphytic bryophytes on small *Quercus copeyensis* stems in a Costa Rican montane cloud forest. *Revista de Biología Tropical* 46: 217–224. http://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S0034-77441998000200005&lng=es&nrm=iso
van Reenen, G. B. A. 1982. Studies on Colombian cryptogams XII. High Andean species of *Herbertus* S. F. Gray (Hepaticae). *Lindbergia* 8(2): 110–120. https://www.jstor.org/stable/20149429
van Reenen, G. B. A., D. Griffin, and S. R. Gradstein. 1986. Briófitas del Transecto Buritaca-La Cumbre, Sierra Nevada de Santa Marta, Colombia. *Studies on Tropical Andean Ecosystems* 2: 177–183.
Van Slageren, M. 1985a. A review of the genus *Blepharolejeunea* S. Arnell. *Mededelingen van het Botanisch Museum en Herbarium van de Rijks Universiteit te Utrech* 544: 207–240.
Van Slageren, M. 1985b. A taxonomic monograph of the genera *Brachiolejeunea* and *Frullanoides*. *Mededelingen van het Botanisch Museum en Herbarium van de Rijks Universiteit te Utrech* 544: 7–205.
Van Slageren, M., and W. Berendsen. 1985. A scanning electron microscopic analysis of the sporophyte in the Ptychanthoideae. *Mededelingen van het Botanisch Museum en Herbarium van de Rijks Universiteit te Utrech* 544: 243–302.
Van Slageren, M., and C. Kruijt. 1985. A review of the genus *Blepharolejeunea* S. Arn. *Beiheft zur Nova Hedwigia* 80: 113–154.
Van Zanten, B. O. 1976. Preliminary report on germination experiments designed to estimate the survival chances of moss spores during aerial trans-oceanic long-range dispersal in the Southern Hemisphere, with particular reference to New Zealand. *Journal of the Hattori Botanical Laboratory* 41: 133–140.
Van Zanten, B. O. 1978. Experimental studies on trans-oceanic long-range dispersal of moss spores in the Southern Hemisphere. *Journal of the Hattori Botanical Laboratory* 44: 455–482.
Van Zanten, B. O., and S. R. Gradstein. 1987. Feasibility of long-distance transport in Colombian hepatics, preliminary report. *Symposia Biologica Hungarica* 35: 315–322.
Van Zanten, B. O., and S. R. Gradstein. 1988. Experimental dispersal geography of neotropical liverworts. *Beiheft zur Nova Hedwigia* 90: 41–94.
Van Zanten, B. O., and T. Pócs. 1981. Distribution and dispersal of bryophytes. *Advances in Bryology* 1: 479–562.
Véliz, M., M. García, A. Cóbar, and F. Ramírez. 2004. *Diversidad florística del monte espinoso*. Universidad de San Carlos de Guatemala, Dirección General de Investigaciones. Guatemala.
Verdoorn, F. 1928. Ueber einige amerikanische Frullaniaceae, De Frullaniaceis II. *Annales de Cryptogamie Exotique* 1(2): 213–220. https://bibdigital.rjb.csic.es/idurl/1/11224
Verdoorn, F. 1930. Die Frullaniaceae der Indomalesischen Inseln (De Frullaniaceis VII). *Annales Bryologici, Suppl.* 1: 1–187. https://bibdigital.rjb.csic.es/idurl/1/16493
Verdoorn, F. 1931. Hepaticae selectae et criticae, series 1 (1930). *Annales Bryologici* 4: 123–139. https://bibdigital.rjb.csic.es/idurl/1/16474
Verdoorn, F. 1932. Hepaticae selectae et criticae, series III et IV (1932). *Annales Bryologici* 5: 125–144. https://bibdigital.rjb.csic.es/idurl/1/16450
Verdoorn, F. 1933. Hepaticae selectae et criticae, series V et VI. *Annales Bryologici* 6: 95–104. https://bibdigital.rjb.csic.es/idurl/1/16449

Verdoorn, F. 1934a. De Frullaniaceis XIV. Revision der von Ozeanien, Australien und Neuseeland angeführten Lejeuneaceae Holostipae. *Blumea* 1(1): 216–240. https://repository.naturalis.nl/pub/525845

Verdoorn, F. 1934b. De Frullaniaceis XVII. Über neue *Frullania*-Sammlungen und die Verbreitung der Jubuleae. *Annales Bryologici, Suppl.* 4: 203–224.

Verdoorn, F. 1935. Hepaticae selectae et criticae, series VII (1934) et series VIII (1935) and Musci selecti et critici, series I (1934) et series II (1935). *Annales Bryologici* 8: 150–158. https://bibdigital.rjb.csic.es/idurl/1/16489

Vianna, E. C. 1970. Marchantiales e Anthocerotales colectados no Rio Grande do Sul. *Iheringia, Botânica* 14: 45–54.

Villarreal, J. C., and S. S. Renner. 2014. A review of molecular clock calibrations and substitution rates in liverworts, mosses, and hornworts, and a timeframe for a taxonomically cleaned-up genus *Nothoceros*. *Molecular Phylogenetics and Evolution* 78: 25–35. https://doi.org/10.1016/j.ympev.2014.04.014

Villarreal, J. C., and K. S. Renzaglia. 2006a. Structure and development of *Nostoc* strands in *Leiosporoceros dussii* (Anthocerotophyta): A novel symbiosis in land plants. *American Journal of Botany* 93(5): 693–705. https://doi.org/10.3732/ajb.93.5.693

Villarreal, J. C., and K. S. Renzaglia. 2006b. Sporophyte structure in the neotropical hornwort *Phaeomegaceros fimbriatus*: Implications for phylogeny, taxonomy, and character evolution. *International Journal of Plant Sciences* 167(3): 413–427. https://doi.org/10.1086/500995

Villarreal, J. C., G. G. Hässel, and N. Salazar Allen. 2007. *Nothoceros superbus* (Dendrocerotaceae), a new hornwort from Costa Rica. *Bryologist* 110(2): 279–285. https://doi.org/10.1639/0007-2745(2007)110%5b279:NSDANH%5d2.0.CO;2

Villarreal, J. C., B. Goffinet, R. J. Duff, and D. C. Cargill. 2010a. Phylogenetic delineation of *Nothoceros* and *Megaceros* (Dendrocerotaceae). *Bryologist* 113(1): 106–113. https://doi.org/10.1639/0007-2745-113.1.106

Villarreal, J. C., D. C. Cargill, and B. Goffinet. 2010b. *Phaeomegaceros squamuliger* subspecies *hasselii* (Dendrocerotaceae, Anthocerotophyta), a new taxon from the southern hemisphere. *Nova Hedwigia* 91(3/4): 349–360. https://doi.org/10.1127/0029-5035/2010/0091-0349

Villarreal, J. C., D. C. Cargill, A. Hagborg, L. Söderström, and K. S. Renzaglia. 2010c. A synthesis of hornwort diversity: Patterns, causes and future work. *Phytotaxa* 9: 150–166. https://doi.org/10.11646/phytotaxa.9.1.8

Villarreal, J. C., L. L. Forrest, K. McFarland, and B. Goffinet. 2012a. Chloroplast, mitochondrial, and nuclear microsatellites from the southern Appalachian hornwort, *Nothoceros aenigmaticus* (Dendrocerotaceae). *American Journal of Botany* 99: 88–90. https://doi.org/10.3732/ajb.1100392

Villarreal, J. C., L. V. Campos, J. Uribe, and B. Goffinet. 2012b. Parallel evolution of endospory within hornworts: *Nothoceros renzagliensis* (Dendrocerotaceae), sp. nov. *Systematic Botany* 37(1): 31–37. https://doi.org/10.1600/036364412X616594

Villarreal, J. C., N. Cusimano, S. S. Renner. 2015. Biogeography and diversification rates in hornworts: The limitations of diversification modeling. *Taxon* 64(2): 229–238. https://doi.org/10.12705/642.7

Villarreal, J. C., J. G. Duckett, S. Pressel. 2017. Morphology, ultrastructure and phylogenetic affinities of the single-island endemic *Anthoceros cristatus* Steph. (Ascension Island). *Journal of Bryology* 39(3): 226–234. https://doi.org/10.1080/03736687.2017.1302153

Vilnet, A. A., N. A. Konstantinova, and A. V. Troitsky. 2011. Taxonomical rearrangements of Solenostomataceae (Marchantiophyta) with description of a new family Endogemmataceae based on trnL-F cpDNA analysis. *Folia Cryptogamica Estonica* 48: 125–133. http://ojs.utlib.ee/index.php/FCE/article/view/13641

Vilnet, A. A., N. A. Konstantinova, and A. V. Troitsky [Вильнет АА, Константинова НА, Троицкий АВ]. 2012. Molecular phylogeny and systematics of the suborder Cephaloziineae with special attention to the family Cephaloziaceae s.l. (Jungermanniales, Marchantiophyta) [Молекулярная филогения и систематика подпорядка Cephaloziineae и в особенности семейства Cephaloziaceae s.l. (Jungermanniales, Marchantiophyta)]. *Arctoa* 21: 113–132. https://doi.org/10.15298/arctoa.21.11

von Flotow, J. C. G., R. von Göppert, and C. G. Nees. 1842. Ueber Páo Pereira und mehrere darauf wachsende kryptogamische Pflanzen. *Repertorium* für die *Pharmacie* 76: 32–55. https://www.digitale-sammlungen.de/en/view/bsb10288276?page=1

von Konrat, M., A. Hagborg, L. Söderström, J. Mutke, M. Renner, S. R. Gradstein, J. Engel, R.-L- Zhu, and J. Pickering. 2008. Early land plants today: Global patterns of liverwort diversity, distribution and floristic knowledge. In *Bryology in the new millennium*, ed. H. B. B. Mohamed, A. Baki, A. Nasrulhaq-Boyce, and P. K. Y. Lee, pp. 425–438. University of Malaya, Kuala Lumpur.

Von Konrat, M. J., L. Söderström, A. Hagborg, M. R. Crosby, and J. J. Engel. 2010. Early Land Plants Today: Index of liverworts & hornworts 2006–2008. *Cryptogamie, Bryologie* 31(1): 3–30. https://sciencepress.mnhn.fr/en/periodiques/bryologie/31/1/early-land-plants-today-index-liverworts-hornworts-2006-2008

von Martens, G. 1870. *Kurzia crenacanthoidea*, eine neue Alge. *Flora* 53(27): 417–418. https://www.biodiversitylibrary.org/item/969#page/426/mode/1up

Voronov', I. N. 1914. Materìalny k' flore pechenochnikov' Kavkaza. *Izvěstìâ Kavkazskago Muzeâ* 8: 81–88.

Wahlenberg, G. 1814. *Flora carpatorum principalium*. Impensis Vandenhock et Ruprecht, Gottingae, 408 pp. https://www.digitale-sammlungen.de/en/view/bsb10303804?page=5

Wanek, W., and K. Pörtl. 2008. Short-term 15N uptake kinetics and nitrogen nutrition of bryophytes in a lowland rainforest, Costa Rica. *Functional plant biology* 35(1): 51–62. https://doi.org/10.1071/FP07191

Wang, J., and R.-L. Zhu. 2008. *Lejeunea laii* nom. nov. for *Lejeunea ramulosa* (Herzog) R. M. Schust. (Jungermanniopsida: Lejeuneaceae) from Taiwan. *Journal of Bryology* 30(2): 173–174. https://doi.org/10.1179/174328208X300624

Wang, J., S. R. Gradstein, X.-Q. Shi, and R.-L. Zhu. 2014. Phylogenetic position of *Trocholejeunea* and a new infrageneric classification of *Acrolejeunea* (Lejeuneaceae, Marchantiophyta). *Bryophyte Diversity and Evolution* 36(1): 31–44. https://doi.org/10.11646/bde.36.1.3

Wang, J., R.-L. Zhu, and S. R. Gradstein. 2016. Taxonomic revision of Lejeuneaceae subfamily Ptychanthoideae (Marchantiophyta) in China. *Bryophytorum Bibliotheca* 65: 1–141.

Warnstorf, C. 1916. Bryophyta nova europaea et exotica. *Hedwigia* 57(1/2): 62–131. https://www.biodiversitylibrary.org/item/13901#page/80/mode/1up

Weber, F. 1815. *Historiae muscorum hepaticarum prodromus*. Aug. Hesse, Academiae bibliopolae, Kiel, 160 pp. http://books.google.de/books/pdf/Historiae_muscorum_hepaticorum_prodromus.ppp?id=OPcKAAAAIAAJ&output=pdf&sig=ACfU3U2-qPDSpaU5O0uGLJP1w87v5PA6AA

Weber, W. A. 1993. Additions to the Galapagos and Cocos Islands Lichen and Bryophyte floras. *Bryologist* 96(3): 431–434. https://doi.org/10.2307/3243873

Wei, Y.-M., R.-L. Zhu, and S. R. Gradstein. 2014. Notes on Early Land Plants Today. 49. On *Lejeunea huctumalcensis* and the resurrection of *Otigoniolejeunea*, an older name for *Physantholejeunea* (Marchantiophyta, Lejeuneaceae). *Phytotaxa* 162(4): 236–238. https://doi.org/10.11646/phytotaxa.162.4.8

Wellman, C. H., P. L. Osterloff, and U. Mohiuddin. 2003. Fragments of the earliest land plants. *Nature* 425: 282–285. https://doi.org/10.1038/nature01884

Wheeler, J. A. 2000. Molecular phylogenetic reconstructions of the marchantioid liverwort radiation. *Bryologist* 103(2): 314–333. https://doi.org/10.1639/0007-2745(2000)103%5b0314:MPROTM%5d2.0.CO;2

Whittemore, A. T., and B. Allen. 1996. The liverworts and hornworts of Belize. *Bryologist* 99(1): 64–67. https://doi.org/10.2307/3244439

Wigginton, M. J. 2012. Bryophytes of St Helena, south Atlantic Ocean. 6. *Cheilolejeunea* (Spruce) Schiffn. (Jungermanniales: Lejeuneaceae), including *C. microscypha* (Hook.f. & Taylor) M.Wigginton, comb. Nov. and *C. rotalis* (Hook.f. & Taylor) M.Wigginton, comb. Nov. *Journal of Bryology* 34(4): 268–276. https://doi.org/10.1179/1743282012Y.0000000027

Wilson, W. 1841. *Musci americani*. Warrington, 180 pp.

Wilson, R., S. R. Gradstein, J. Heinrichs, H. Groth, A. L. Ilkiu-Borges, and F. A. Hartmann. 2004. Phylogeny of Lejeuneaceae: A cladistic analysis of chloroplast gene rbcL sequences and morphology with preliminary comments on the mitochondrial NAD4-2 spacer region. *Monograph in Systematic Botany from the Missouri Botanical Garden* 98: 189–202.

Wilson, R., S. R. Gradstein, H. Schneider, and J. Heinrichs. 2007. Unravelling the phylogeny of Lejeuneaceae (Jungermanniopsida): Evidence for four main lineages. *Molecular Phylogenetics and Evolution* 43(1): 270–282. https://doi.org/10.1016/j.ympev.2006.10.017

Winkler, S. 1967. Die epiphyllen Moose der Nebelwälder von El Salvador, C. A. *Revue Bryologie Lichénologique* 35(1/4): 303–369. https://www.biodiversitylibrary.org/item/281549#page/320/mode/1up

Winter, G., and A. Schäfer-Verwimp. 2020. Re-evaluation of the taxonomic status of *Frullania caulisequa* and *Frullania obcordata* (Frullaniaceae, Marchantiophyta). *Frahmia* 19: 1–21. http://frahmia.de/downloads/frahmia/frahmia_0019.pdf

Worley, I. A. 1972. *The bryo-geography of southeastern Alaska*. University of British Columbia, Vancouver, 715 pp.

Xiang, Y.-L., L. Shu, and R.-L. Zhu. 2016. *Marchantia longii* (Marchantiaceae), a new species from northwestern Yunnan, China. *Bryologist* 119(3): 280–289. https://doi.org/10.1639/0007-2745-119.3.280

Yamada, K. 1980. Notes on the type specimens of Radula taxa from Latin America (1). *Journal of the Hattori Botanical Laboratory* 48: 243–257.
Yamada, K. 1981a. A new locality of *Cololejeunea aoshimensis* (Horik.) Mizut. *Proceedings of the Bryological Society of Japan* 3(1): 11. https://doi.org/10.24474/koke.3.1_11_1
Yamada, K. 1981b. Notes on the type specimens of Radula taxa from Latin America (2). *Journal of the Hattori Botanical Laboratory* 49: 385–398.
Yamada, K. 1982. Notes on the type specimens of *Radula* taxa from Latin America (3). *Journal of the Hattori Botanical Laboratory* 52: 449–463. https://doi.org/10.18968/jhbl.52.0_449
Yamada, K. 1983. Four new species of *Radula* from Cuba. *Journal of the Hattori Botanical Laboratory* 54: 241–249. https://doi.org/10.18968/jhbl.54.0_241
Yamada, K. 1987. Notes on the type specimens of *Radula* taxa from Latin America. 4. *Journal of the Hattori Botanical Laboratory* 62: 289–298. https://doi.org/10.18968/jhbl.62.0_289
Yamada, K. 1988a. Notes on Latin American species of the genus *Radula*, Hepaticae (2). *Journal of Japanese Botany* 63(7): 241–245. http://www.jjbotany.com/pdf/JJB_063_241_245.pdf
Yamada, K. 1988b. The genus *Radula* from Cuba. *Journal of the Hattori Botanical Laboratory* 65: 379–390. https://doi.org/10.18968/jhbl.65.0_379
Yamada, K. 1990. Two new species of *Radula* from (Hepaticae) from Australia and Brazil. *Journal of Japanese Botany* 65(1): 1–6. http://www.jjbotany.com/pdf/JJB_065_1_6_d.pdf
Yamada, K. 1991. Notes on the type specimens of *Radula* taxa from Latin America. 5. *Journal of the Hattori Botanical Laboratory* 69: 87–99. https://doi.org/10.18968/jhbl.69.0_87
Yamada, K. 1993. Notes on the type specimens of *Radula* taxa from Latin America 6. *Journal of the Hattori Botanical Laboratory* 73: 125–137. https://doi.org/10.18968/jhbl.73.0_125
Yamada, K. 1995. *Radula carringtonii* (Hepaticae, Radulaceae) new to the New World. *Fragmenta Floristica et Geobotanica* 40: 123–126.
Yamada, K. 1997. Two new *Radula* species (Hepaticae, Radulaceae) from the Neotropica. *Journal of the Hattori Botanical Laboratory* 82: 337–342. https://doi.org/10.18968/jhbl.82.0_337
Yamada, K. 2000. A collection of the genus *Radula* (Radulaceae; Hepaticae) made by Marko Lewis in Bolivia. *Journal of the Hattori Botanical Laboratory* 88: 257–265. https://doi.org/10.18968/jhbl.88.0_257
Yamada, K., and S. R. Gradstein. 1991. The genus *Radula* (Hepaticae) in the Galapagos Islands. *Tropical Bryology* 4: 63–68. https://doi.org/10.11646/BDE.4.1.8
Yano, O., and A. P. Luizi-Ponzo. 2011. *Dumortiera hirsuta* (Dumortieraceae, Marchantiophyta), taxonomy, palynology and geographic distribution. *Boletim do Instituto de Botânica. São Paulo* 21: 9–18.
Yano, O., and D. F. Peralta. 2008. *Flora dos Estados de Goiás e Tocantins Criptógamas. Volume 7: Antóceros (Anthocerotophyta) e hepáticas*. PRPPG/UFG, Goiânia, 279 pp.
Yano, O., and D. F. Peralta. 2009. Flora de Grão-Mogol, Minas Gerais, Briófitas (Bryophyta e Marchantiophyta). *Boletim do Instituto de Botânica. São Paulo* 27: 1–26.
Ye, W., and Y.-M. Wei. 2021. *Gaolejeunea hoi* (Lejeuneaceae), a new species and generic record from Singapore. *Bryologist* 124(4): 600–604. https://doi.org/10.1639/0007-2745-124.4.600
Ye, W., and R.-L. Zhu. 2009. The status of *Strepsilejeunea papillata* Herzog from India, with reference to *Cheilolejeunea subopaca* (Mitt.) Mizut. and *C. inflexa* (Hampe ex Lehm.) Grolle. *Journal of Bryology* 31(3): 180–185. https://doi.org/10.1179/174328209X455280
Ye, W., and R.-L. Zhu. 2010. *Leucolejeunea*, a new synonym of *Cheilolejeunea* (Lejeuneaceae), with special reference to new combinations and nomenclature. *Journal of Bryology* 32(4): 279–282. https://doi.org/10.1179/037366810X12814321877507
Ye, W., and R.-L. Zhu. 2018. *Gaolejeunea*, a new genus from China and new member of subtribe Echinolejeuneinae (Lejeuneaceae, Marchantiophyta). *Bryologist* 121(1): 41–48. https://doi.org/10.1639/0007-2745-121.1.041
Ye, W., Y.-M. Wei, A. Schäfer-Verwimp, and R.-L. Zhu. 2013. Phylogenetic position of *Oryzolejeunea* (Lejeuneaceae, Marchantiophyta): Evidence from molecular markers and morphology. *Journal of Systematic Evolution* 51(4): 468–475. https://doi.org/10.1111/j.1759-6831.2012.00238.x
Ye, W., S. R. Gradstein, A. J. Shaw, B. C. Ho, A. Schäfer-Verwimp, T. Pócs, J. Heinrichs, R.-L. Zhu. 2015. Phylogeny and classification of Lejeuneaceae subtribe Cheilolejeuneinae (Marchantiophyta) based on nuclear and plastid molecular markers. *Cryptogamie, Bryologie* 36(4): 313–333. https://doi.org/10.7872/cryb/v36.iss4.2015.313
Yu, Y., T. Pócs, A. Schäfer-Verwimp, J. Heinrichs, R.-L. Zhu, and H. Schneider. 2013. Evidence for rampant homoplasy in the phylogeny of the epiphyllous liverwort genus *Cololejeunea* (Lejeuneaceae). *Systematic Botany* 38(3): 553–563. https://doi.org/10.1600/036364413X670304
Yu, Y., T. Pócs, and R.-L. Zhu. 2014. Notes on Early Land Plants Today. 62. A synopsis of *Myriocoleopsis* (Lejeuneaceae, Marchantiophyta) with special reference to transfer of *Cololejeunea minutissima* to *Myriocoleopsis*. *Phytotaxa* 183(4): 293–297. https://doi.org/10.11646/phytotaxa.183.4.11
Yuzawa, Y. 1988. Some little-known species of *Frullania* subgen. *Diastaloba* described from Latin America. *Journal of the Hattori Botanical Laboratory* 64: 437–449.
Yuzawa, Y. 1991. A monograph of subgen. *Chonanthelia* of gen. *Frullania* (Hepaticae) of the world. *Journal of the Hattori Botanical Laboratory* 70: 181–291.
Yuzawa, Y., and S. Hattori. 1988. A new species of *Frullania* from Brazil. *Journal of Japanese Botany* 63(1): 30–32. http://www.jjbotany.com/pdf/JJB_063_30_32.pdf
Yuzawa, Y., and N. Koike. 1989. Studies on the type specimens of Latin American *Frullania* species (1). *Journal of the Hattori Botanical Laboratory* 66: 343–358.
Zartman, C. E., and A. L. Ilkiu-Borges. 2007. *Guia para as briófitas epífilas da Amazônia central* [*Guide to the epiphyllous bryophytes of central Amazonia*]. Instituto Nacional de Pesquisa da Amazônia, Manaus, Amazonas, 140 pp.
Zhang, J., X.-X. Fu, R.-Q. Li, X. Zhao, Y. Liu, M.-H. Li, A. Zwaenepoel, H. Ma, B. Goffinet, Y.-L. Guan, J.-Y. Xue, Y.-Y. Liao, Q. Wang, Q.-H. Wang, J.-Y. Wang, G.-Q. Zhang, Z.-W. Wang, Y. Jia, M.-Z. Wang, S. Dong, J. F. Yang, Y.-N. Jiao, Y.-L. Guo, H.-Z. Kong, A.-M. Lu, H.-M. Yang, Zhang S-Z, Y. Van de Peer, Z. J. Liu, and Z.-D. Chen. 2020. The hornwort genome and early land plant evolution. *Nature Plants* 6: 107–118. https://doi.org/10.1038/s41477-019-0588-4
Zhang, L. 2003. An updated and annotated inventory of Hong Kong bryophytes. *Memoirs of the Hong Kong Natural History Society* 26: 1–133.
Zhu, R.-L. 2006. *Cololejeunea dauphinii* nom. nov. for *Cololejeunea tixieri* M. Morales & G. Dauphin from Panamá (Jungermanniopsida: Lejeuneaceae). *Journal of Bryology* 28(3): 277. https://doi.org/10.1179/174328206X157202
Zhu, R.-L., and S. R. Gradstein. 2005. Monograph of *Lopholejeunea* (Spruce) Schiffn. (Lejeuneaceae, Hepaticae) in Asia. *Monograph in Systematic Botany from the Missouri Botanical Garden* 74: 1–95.
Zhu, R.-L., and R. Grolle. 2001. Notes on the taxonomy and distribution of *Acanthocoleus yoshinaganus* and *Lejeunea papilionacea* (Hepaticae, Lejeuneaceae). *Annales Botanici Fennici* 38(4): 329–336. http://www.sekj.org/PDF/anbf38/anbf38-329p.pdf
Zhu, R.-L., and D. G. Long. 2003. Lejeuneaceae (Hepaticae) from several recent collections from the Himalaya. *Journal of the Hattori Botanical Laboratory* 93: 101–115. https://doi.org/10.18968/jhbl.93.0_101
Zhu, R.-L., L. Shu. 2018. The systematic position of *Microlejeunea ocellata* (Marchantiophyta: Lejeuneaceae), an extraordinary species endemic to Australia and New Zealand. *Bryologist* 121(2): 158–165. https://doi.org/10.1639/0007-2745-121.2.158
Zhu, R.-L., and M. L. So. 2001. Epiphyllous liverworts of China. *Nova Hedwigia Beiheft* 121: 1–418.
Zhu, R.-L., D. G. Long, and T. Yamaguchi. 1999. *Cololejeunea yulensis* (Steph.) Benedix and *Rhaphidolejeunea spicata* (Steph.) Grolle new to Japan, with taxonomic notes on *Cololejeunea obliqua* (Nees & Mont.) Schiffn. *Journal of Bryology* 21(4): 293–297. https://doi.org/10.1179/jbr.1999.21.4.293
Zhu, R.-L., L. Shu, A. M. A. Mustapeng, and M. Suleiman. 2017. *Thiersianthus* (Marchantiophyta: Lejeuneaceae), a new genus from lowland rainforests in Borneo. *Bryologist* 120(4): 511–520. https://doi.org/10.1639/0007-2745-120.4.511
Zhu, R.-L., L. Shu, Q. He, and Y.-M. Wei. 2018a. *Soella* (Marchantiophyta: Lejeuneaceae), a new genus from China and Japan. *Bryologist* 121(3): 324–339. https://doi.org/10.1639/0007-2745-121.3.324
Zhu, R.-L., L. Shu, C. J. P. Bastos, and S. B. V. Bôas-Bastos. 2018b. *Yanoella* (Marchantiophyta: Lejeuneaceae), a new genus from the Brazilian Atlantic Forest. *Bryologist* 121(3): 264–274. https://doi.org/10.1639/0007-2745-121.3.264
Zhu, R.-L., X.-F. Bi, and L. Shu. 2019. *Mohamedia*, a new genus of Lejeuneaceae (Marchantiophyta) from Oceania and tropical Asia. *Bryologist* 122(1): 84–97. https://doi.org/10.1639/0007-2745-122.1.084
Zwickel, W. 1932. Studien über die Ocellen der Lebermoose. *Beihefte zum Botanischen Centralblatt. Abt. 1, Anatomie, Histologie, Morphologie und Physiologie der Pflanzen* 49: 569–648. https://bibdigital.rjb.csic.es/idurl/1/12656
Zwickel, W. 1933. Zwei neue Gattungen, einige neue Arten und Umstellungen bei den Lejeuneaceen. *Annales Bryologici* 6: 105–121. https://bibdigital.rjb.csic.es/idurl/1/16449